PROVIDENCE
Medical Group
Southwest Washington
Boldt Diabetes & Nutrition Center

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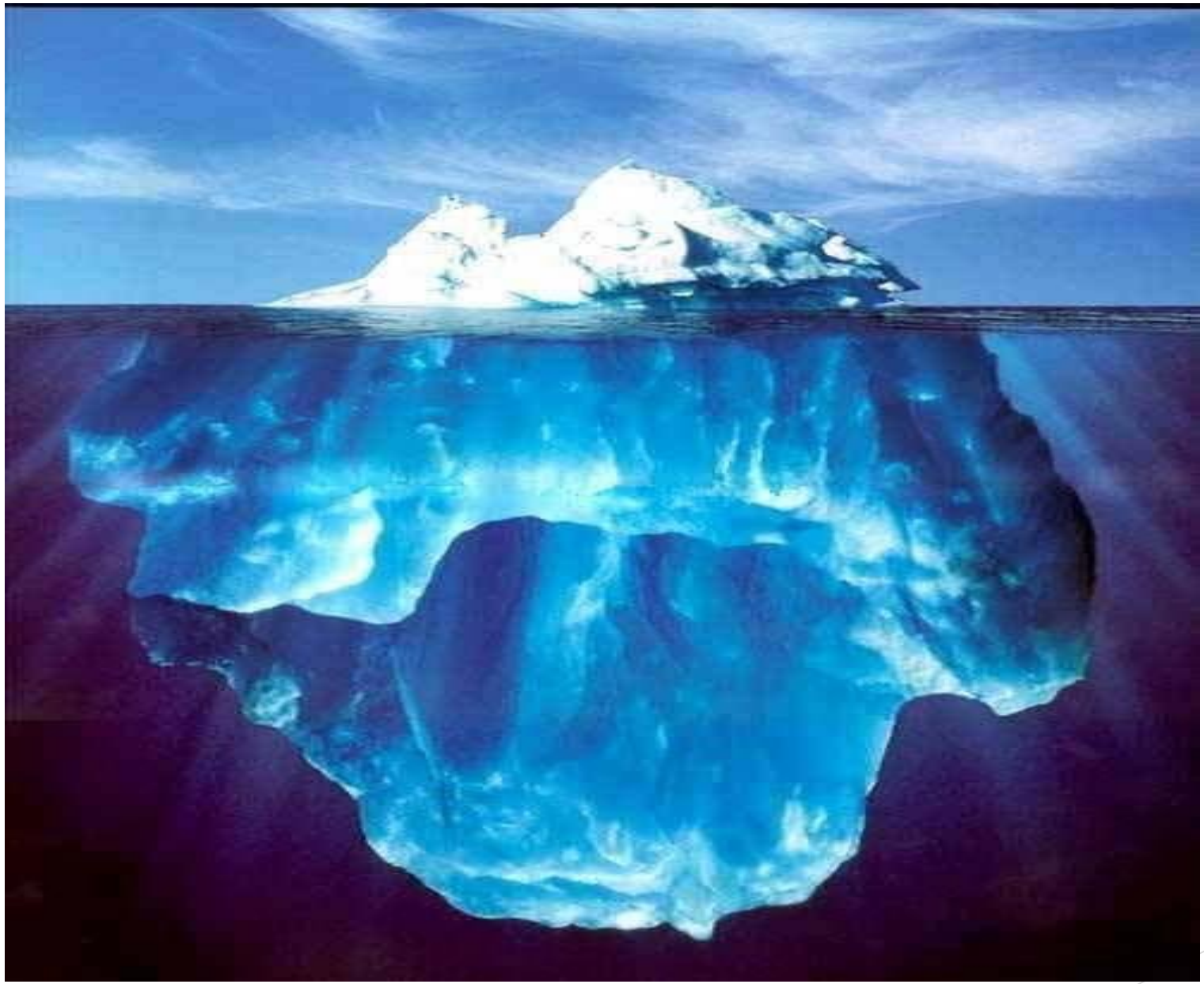
Providence Medical Group Diabetes & Nutrition Education

(Boldt Diabetes Center)

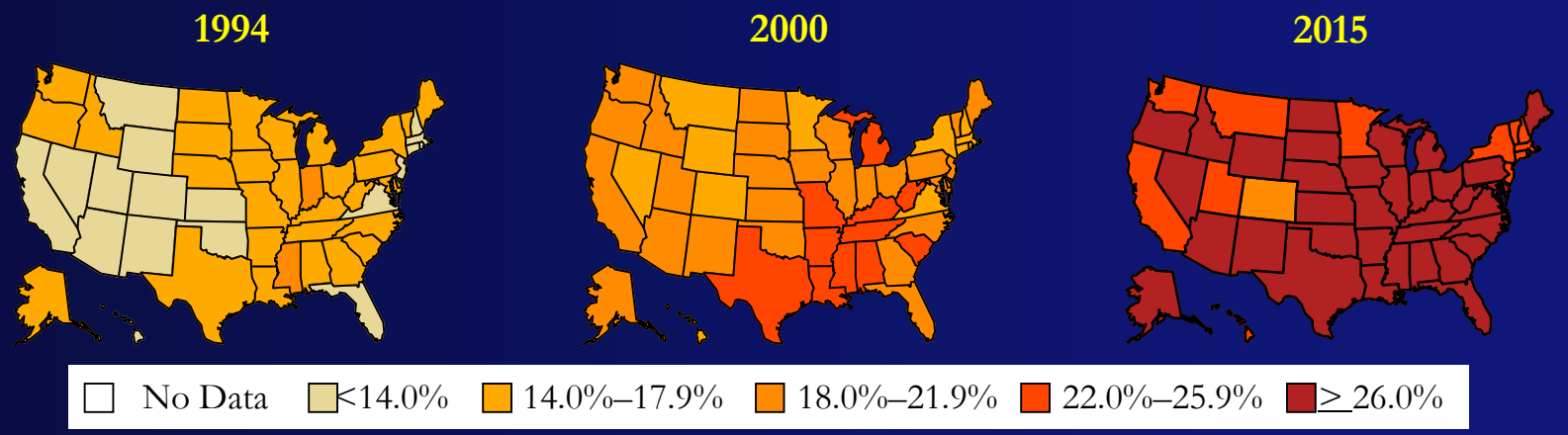
Epidemic Proportions

- Nearly 29.1 Million Americans
- 1 in 7 in WA State
- Cost= ~8billion $/year (average lifetime cost is $85,200
- 86 Million with Pre-diabetes
- 8.1 Million Americans unaware they have Diabetes
- Better Control = lower cost, improved QOL, Dec mortality

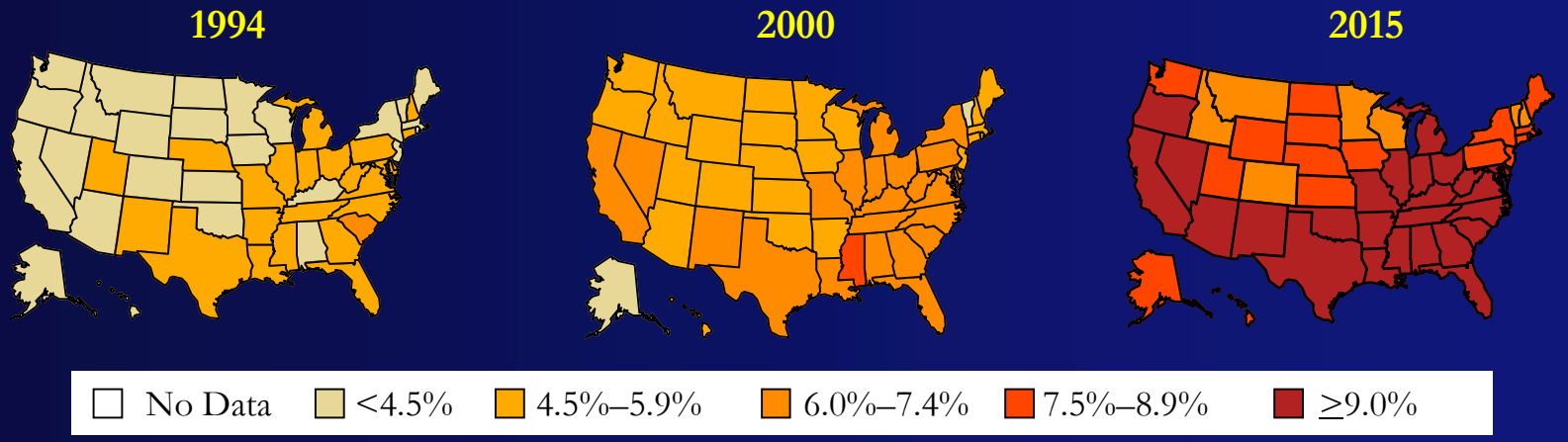


Age-adjusted Prevalence of Obesity and Diagnosed Diabetes Among US Adults

Obesity (BMI ≥30 kg/m^2)



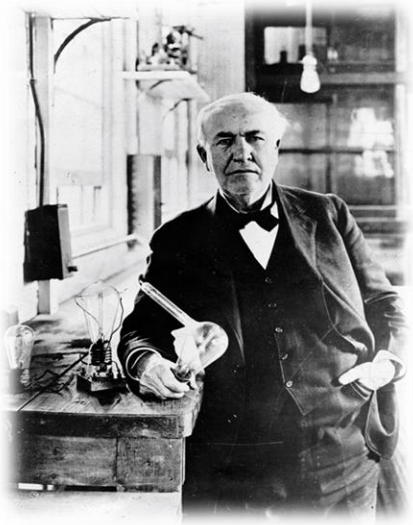
Diabetes



CDC's Division of Diabetes Translation. United States Surveillance System available at http://www.cdc.gov/diabetes/data

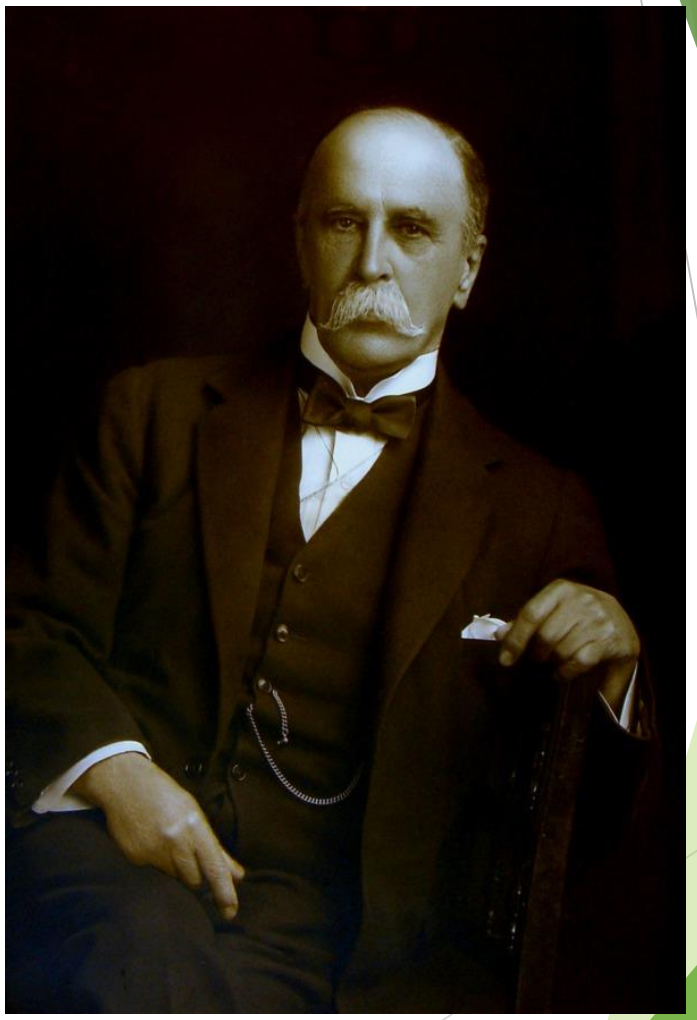
What is Diabetes?

What do Tom Hanks, Elizabeth Taylor, Thomas Edison, Paula Dean, Halle Berry, and Gary Hall Jr. all have in common?



“To live a long and healthy life, develop a chronic disease and learn take care of it.”

Sir William Osler

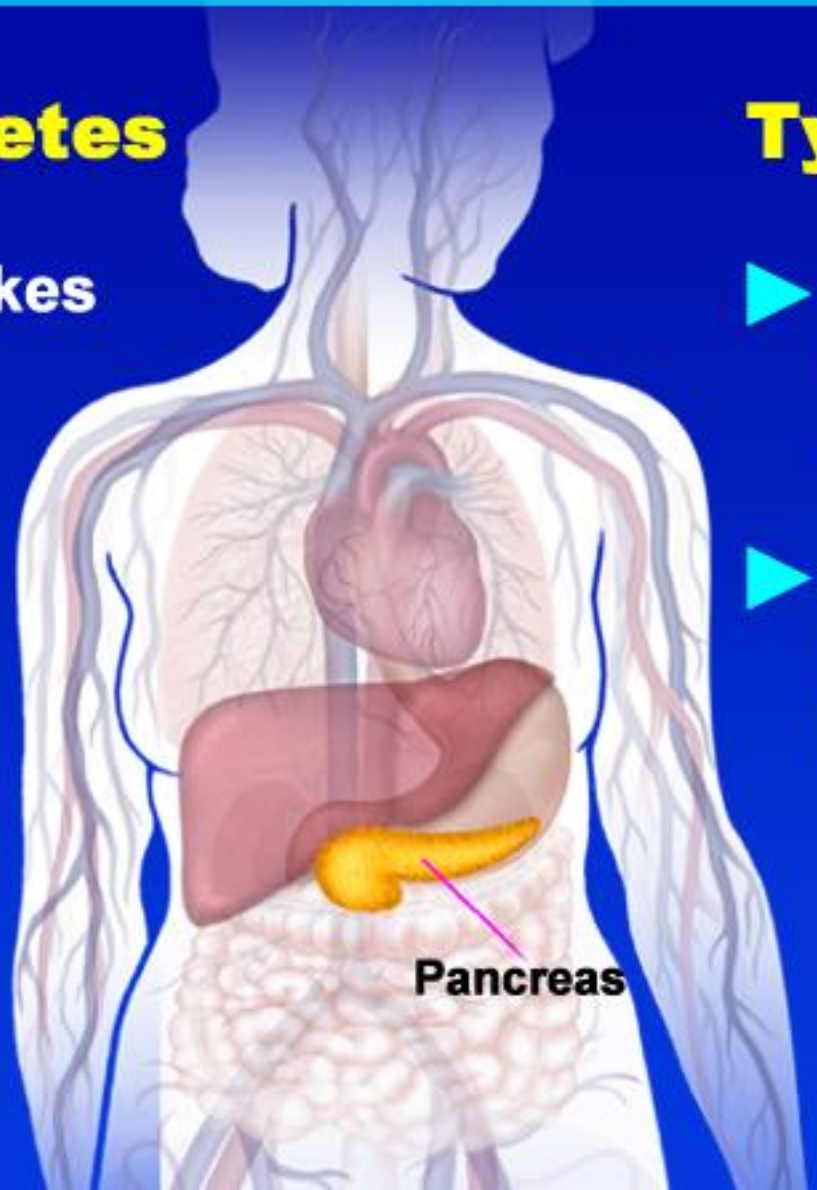


INSULIN the Movie!

Two Main Types of Diabetes

Type 1 Diabetes

- Pancreas makes too little or no insulin



Type 2 Diabetes

- Cells do not use insulin well (insulin resistance)
- Ability for pancreas to make insulin decreases over time

Symptoms of Type 2 Diabetes

- Usually subtle or no symptoms in early stages:
  - Increased thirst
  - Increased urination
  - Feeling tired
  - Blurred vision
  - More frequent infections
- Symptoms tend to occur gradually

Symptoms may be mistaken for other situations or problems (aging, summer heat)

DIAGNOSIS OF DIABETES

Fasting Blood Sugar: ≥ 126

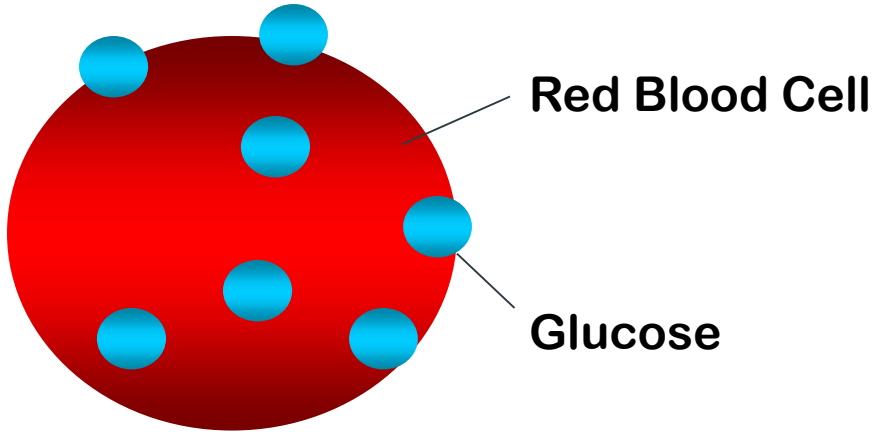
Random Blood Sugar: ≥ 200

Hemoglobin A1C ≥ 6.5

PRE-DIABETES:

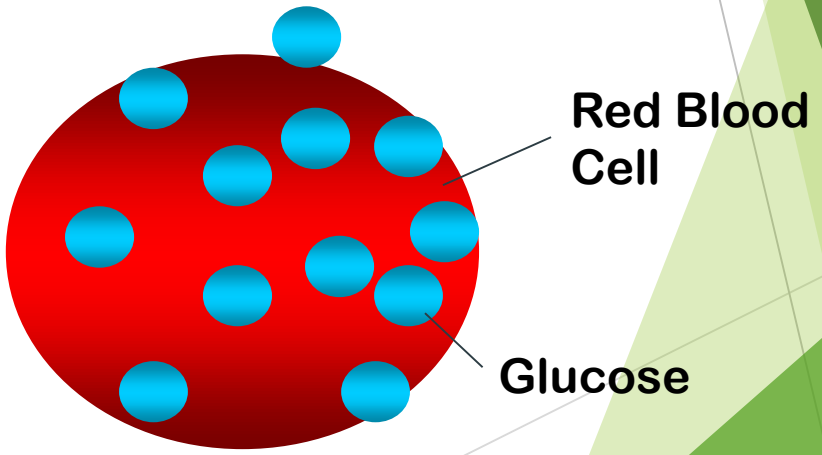
Fasting Blood Sugar: 100-125
Hemoglobin A1C 5.7-6.4

A1C Measures Glucose Levels Over 2-3 Month Period

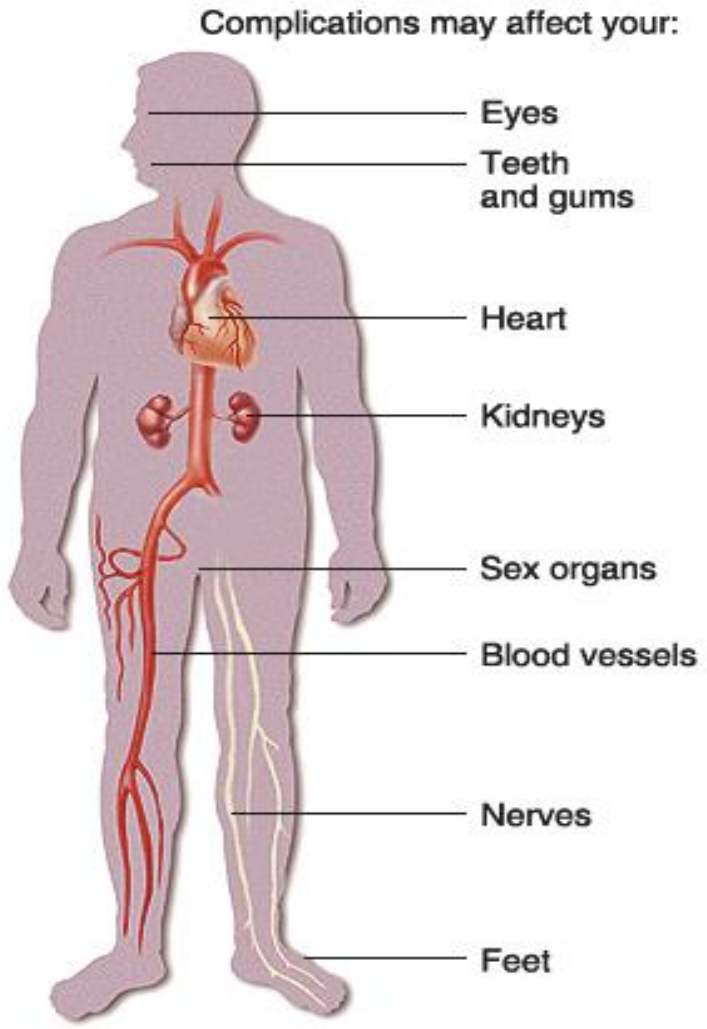


Normal Blood Glucose

High Blood Glucose



Why is high blood glucose a problem?



Keeping Blood Glucose on Target Is Key to Managing Diabetes

Keeping blood glucose as near normal as possible can:

- Prevent symptoms
- Reduce risk of short-term and long-term complications
- Improve overall health

Target Blood Glucose for Diabetes*

	Your Goal	No diabetes	Excellent	Good	Fair	Needs Action
Before meals or bedtime		70-100	70-120	120-130	130-160	Over 160
2 hours after any meal		90-140	90-160	160-180	180-220	Over 220
Average blood glucose		Under 126	126-140	140-154	154-183	Over 183
A1C Test**		Under 6%	6.0-6.5%	6.5-7%	7.0-8.0%	Over 8%
Risk of damage to heart, nerves, eyes and kidneys from high blood glucose		No Risk	Very low Risk 1.25X Risk	Low Risk 1.25-1.5X Risk	Moderate Risk 1.5-2X Risk	High Risk Over 2X Risk

*These are general target blood glucose numbers. All persons with diabetes occasionally experience numbers higher than their targets. Blood glucose should usually, but not always, fall within the targeted range. For some persons target blood glucose numbers may need to be higher to prevent frequent low blood glucose.

**A1C test is a 3 month blood glucose average. Ask your doctor or laboratory for your results.

Diabetes & Emotions

- DENIAL
- ANGER/FEAR
- GUILT/SHAME
- BARGAINING
- DEPRESSION/DESPAIR
- ACCEPTANCE

Movement = Medicine

Nutrition and Diabetes 101

Proteins • Fats • Carbohydrates

Portion Distortion

What you're served

1/2 lb. cheeseburger, French fries, 3/4 cup ketchup, tomato slice and lettuce.
1,345 calories
53 grams fat

What's one serving

1/4 lb. cheeseburger, half the French fries, 2 tablespoons ketchup, tomato slice and lettuce.
685 calories
33 grams fat

QUA NUTRITION
SIGNATURE NUTRITION CLINIC

The “Plate Method”

What types of medications are prescribed for diabetes?

Amount of Carbohydrates Varies Per Person

A Brief History of Diabetes Medications:

- 1920 – Animal Insulin
- 1955 - Sulfonylurea anti-diabetics
- 1981 – Human Insulin
- 1995 – 2000 – 4 new classes of anti-diabetics + analog insulin
- 2005-2016 – 3 new classes of anti-diabetics + inhaled insulin + concentrated insulin's + ultra long acting analog insulin

ORAL MEDICATIONS (5 Classes)

- **STIMULATE INSULIN** Production

- **STOPS LIVER** GLUCOSE PRODUCTION
- **INCREASE** INSULIN SENSITIVITY
- **REDUCE** Carbohydrate Absorption

Oral Medications for Type 2 Diabetes: Biguanides

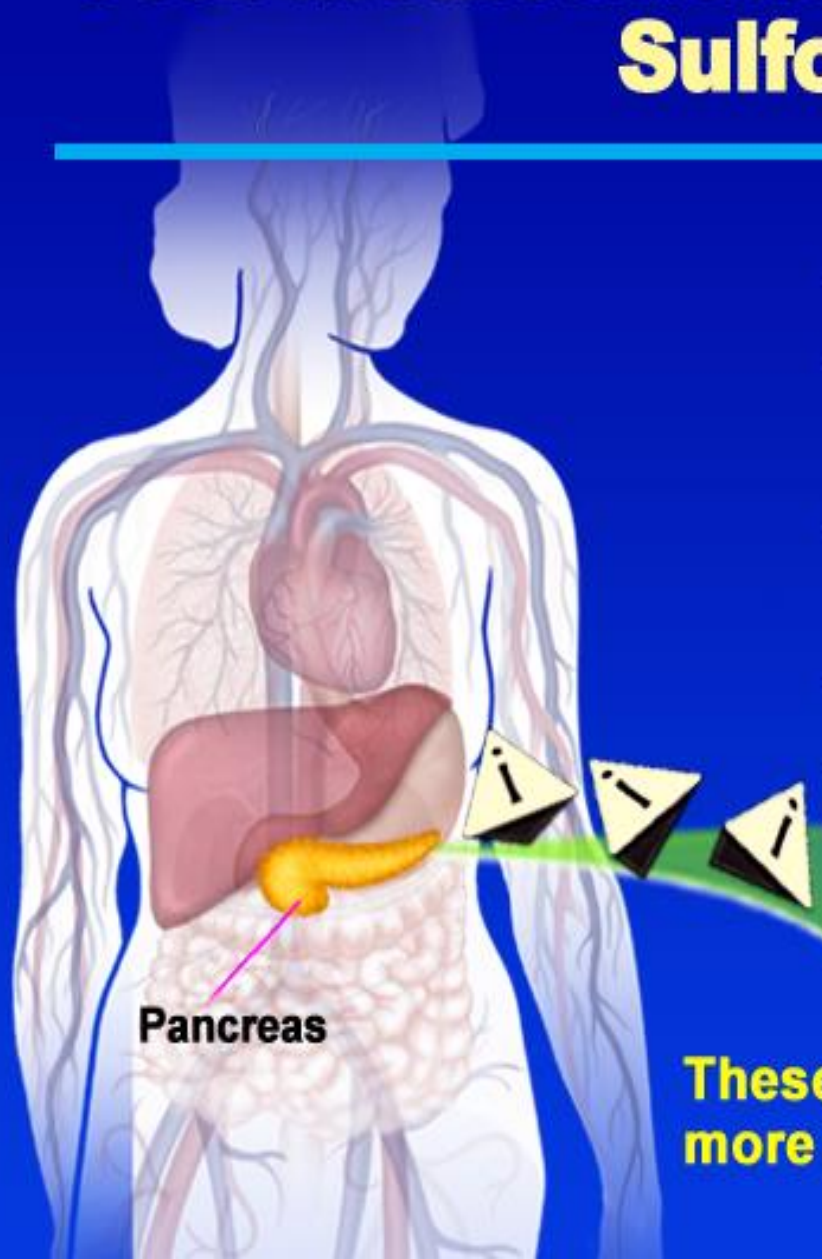
Brand name	*Generic name*
Glucophage, Glucophage XR	Metformin

Metformin keeps the liver from releasing too much glucose

Combination pills using metformin are also available:

- Glucovance is metformin and glyburide
- Avandamet is metformin and rosiglitazone

Oral Medications for Type 2 Diabetes: Sulfonylureas



Brand name	*Generic name*
Amaryl	Glimepiride
DiaBeta, Glynase, Micronase	Glyburide
Glucotrol, Glucotrol XL	Glipizide
Diabinese	Chlorpropamide

These drugs help the pancreas release more insulin, which lowers blood glucose

Oral Medications for Type 2 Diabetes: Reduction in Carb absorption: Alpha-Glucosidase Inhibitors

- Acarbose
- Miglitol

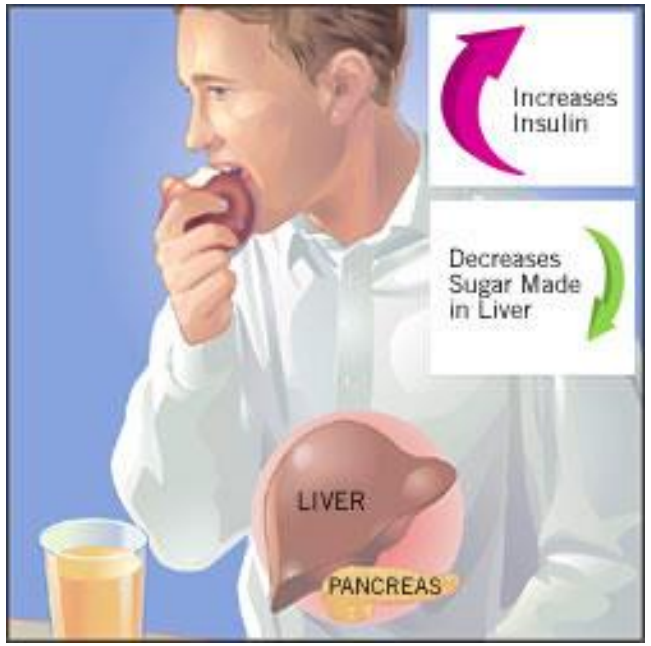
Not widely use due to large incidence of GI side affects (flatulence, bloating), and ineffectiveness on hyperglycemia with simple carbohydrates = they only reduce absorption of complex carbs.

Oral Medications for Type 2 Diabetes: Increase in insulin sensitivity

- TZDs:
  - AVANDIA
  - ACTOS

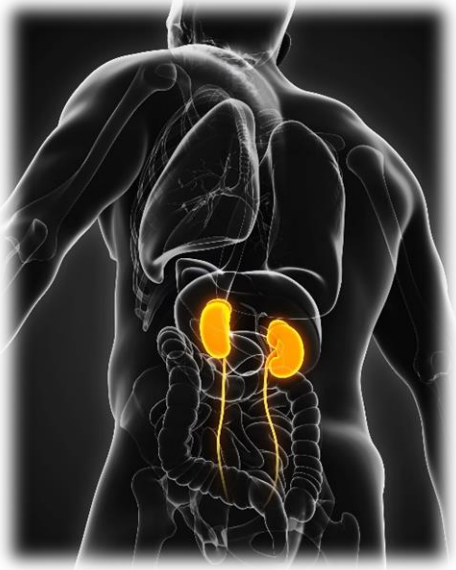
Dipeptidyl-Peptidase Inhibitors *(Gliptins)* = DPP-4's

- **JANUVIA**
- **TRADJENTA**
- **ONGLYZA**



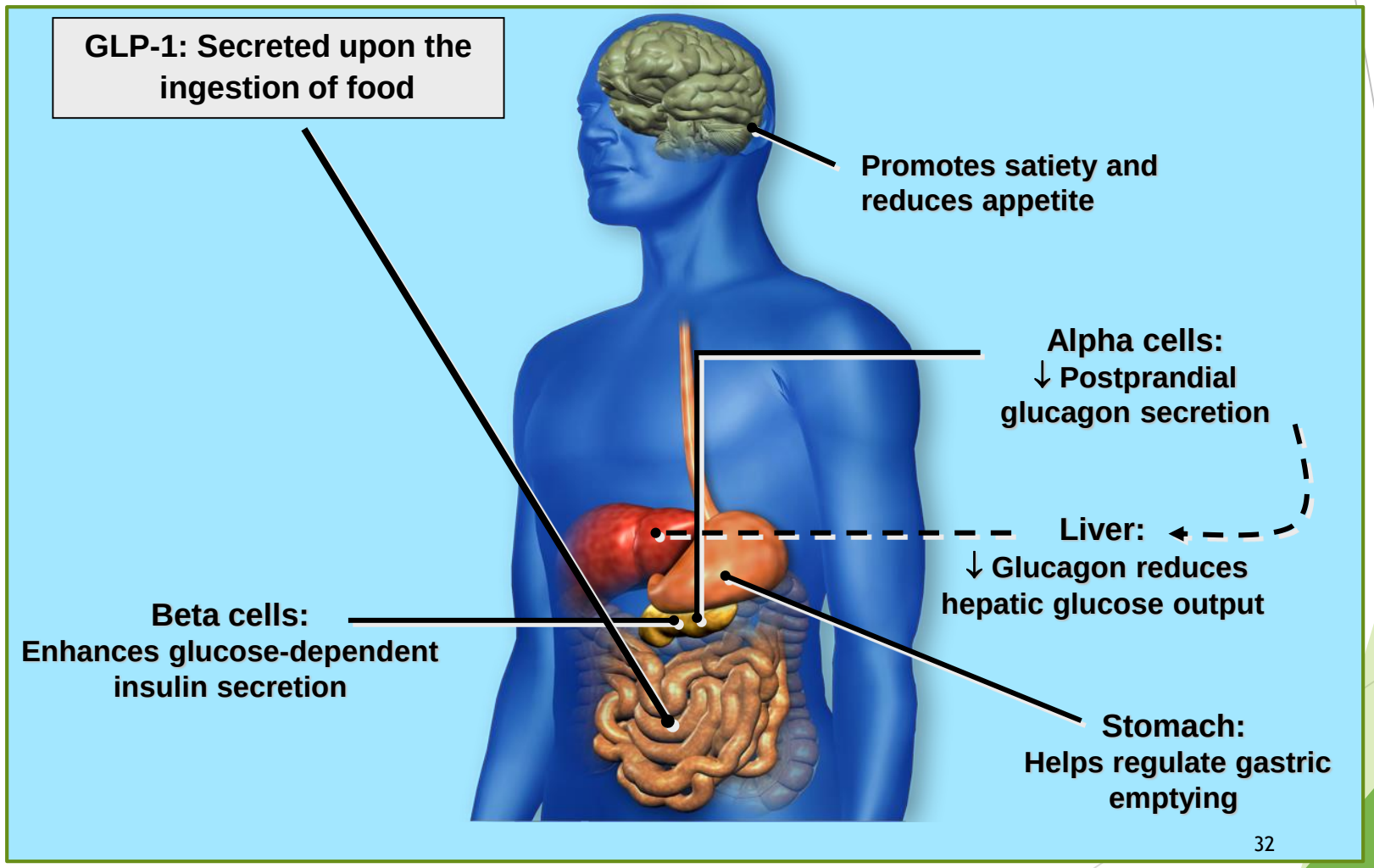
Oral Medications for Type 2 Diabetes:
SGLT2 (Sodium-Glucose Linked Transporter) Inhibitors

- INVOKANA
- FARXIGA
- JARDIANCE



Injectable Medications for Type 2 Diabetes: GLP-1 (Glucagon like peptide -1 Receptor) Agonists (Incretin Mimetics)

- BYETTA
- BYDUREON
- VICTOZA
- TRULICITY
- OZEMPIC



Data from Flint A, et al. *J Clin Invest*. 1998;101:515-520; Data from Larsson H, et al. *Acta Physiol Scand*. 1997;160:413-422
Data from Nauck MA, et al. *Diabetologia*. 1996;39:1546-1553; Data from Drucker DJ. *Diabetes*. 1998;47:159-169

Injectable Medications for Type 2 Diabetes: Insulin

- **Rapid Acting** (Novolog (aspart)/Humalog (lispro) /Apidra(glulisine) IAT = ~4 hours
- **Short Acting** (Regular) IAT = ~8 hours
- **Intermediate Acting** (N/NPH) IAT ~12 hours
- **Long Acting** (Lantus (Glargine), Levemir(Detemir) IAT = ~ 20-24 hours
- Ultra Long Acting (Tresiba – Insulin Degludec) IAT 40hrs
- **Concentrated** (Toujeo (Glargine(, Tresiba (Decludec), Humalog U200, Regular U500 IAT 8-24 hours
- **Combinations** (70/30, 50/50) IAT ~12 hours, with 4-8hr peak depending on combo of regular or rapid

Insulin: Inpatient vs Outpatient

- Inpatient regimen: Basal Insulin Lantus (*glargine*) U100) + Sliding Scale Correction dose Humalog (*lispro)* U100) = Treat when blood sugar is high

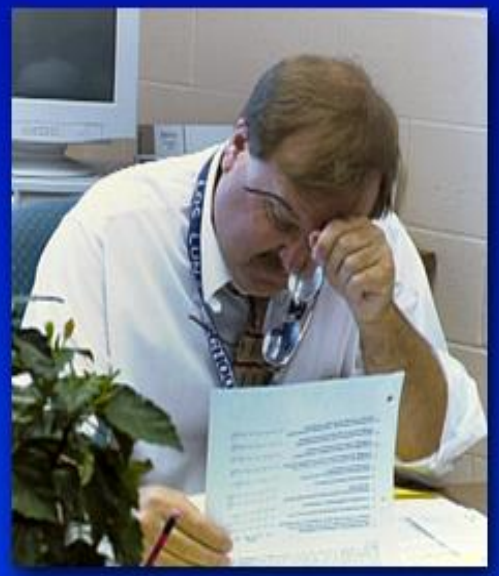
- Outpatient: Basal (Background insulin to replaced background endogenous insulin + bolus (meal) insulin (set dose/set carbs vs insulin to carb ratio) + Correction factor (sliding scale)

Insulin: True or False

1. Insulin should be a last resort for treatment
2. Insulin injections are painful
3. Insulin causes weight gain

Understanding Hypoglycemia

Low blood glucose can occur if you use insulin or some diabetes pills and...



Skip a meal

Take too much medication

Exercise more than usual

Symptoms of Hypoglycemia

- Weakness
- Cold sweat, clammy feeling
- Shakiness
- Hunger
- Irritability
- Headache
- Dizziness
- Trouble concentrating
- Light-headedness

Treating Hypoglycemia

If symptoms occur, follow these steps:

1. If possible, test blood glucose
2. Eat or drink a carbohydrate food (15 grams)
3. Rest for 15 minutes, then retest blood glucose
4. If blood glucose remains too low, repeat steps 2 and 3
5. Eat a meal within the next hour

What is Diabetes Self-Management Education?(DSME)

- Can be provided to Medicare patients only by an ADA/AADE Accredited Diabetes Clinic (PMG Boldt only one in Thurston Co)
- Education by Registered Dietitian (RD) or RN Certified Diabetes Educator (or under training to become a CDE)
- Epic Referral # REF50VV
- When to see a Diabetes Educator

- Education in AADE 7 Self Care Areas of:
- ✓ Healthy Eating
- ✓ Being Active
- ✓ Monitoring
- ✓ Medication
- ✓ Problem Solving
- ✓ Reducing Risks
- ✓ Healthy Coping

PMG SW Boldt Diabetes & Nutrition Center

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Services Include:

Diabetes Self-Management Education (DSME) * ***American Diabetes Association (ADA) Recognized Program***

Medical Nutrition Therapy (MNT) ***Nutrition Education by Registered Dietitians***

Continuous Glucose Monitoring (CGMS) ***a valuable tool in modern diabetes management***

Diabetes Prevention Program (DPP) ***Center for Disease Control (CDC) Recognized Program***

Our experienced educators coach patients in the self care areas of:

Healthy eating
Being Active
Monitoring
Taking Medication
Problem Solving
Reducing Risks
Healthy Coping