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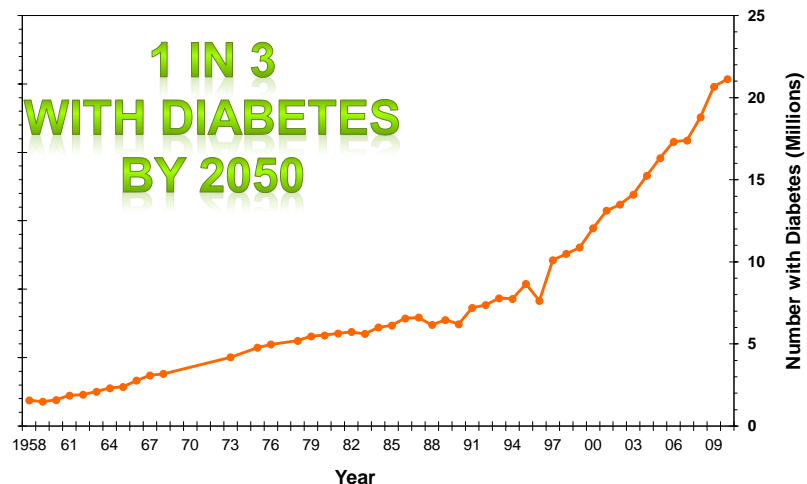
## **GOOD TO KNOW: ABOUT DIABETES**

## PROGRAM OBJECTIVES

- Review latest ADA Position Statement on Nutrition Recommendations for Adults
- Discuss current information on select topics related to diabetes care:
  - Carbohydrates
  - Fructose
  - Non-nutritive sweeteners
  - Alcohol
  - Select dietary supplements
  - Diabetic-specific formulas



## U.S. POPULATION WITH DIAGNOSED DIABETES, 1958-2010



CDC's Division of Diabetes Translation. National Diabetes Surveillance System  
available at <http://www.cdc.gov/diabetes/statistics>



## THE [CONTINUING] EPIDEMIC

- 29.1 million people have diabetes
  - 21 million diagnosed / 8.1 million undiagnosed

	Number with diabetes (millions)	Percentage with diabetes (unadjusted)
<b>Total</b>		
20 years or older	28.9	12.3
<b>By age</b>		
20–44	4.3	4.1
45–64	13.4	16.2
65 years or older	11.2	25.9
<b>By sex</b>		
Men	15.5	13.6
Women	13.4	11.2

Source: 2009–2012 National Health and Nutrition Examination Survey estimates applied to 2012 U.S. Census data.

## THE [CONTINUING] EPIDEMIC

### New cases of diagnosed diabetes among people aged 20 years or older, United States, 2012

	Number of new diabetes cases	Rate of new diabetes cases per 1,000 (unadjusted)
<b>Total</b>		
20 years or older	1.7 million	7.8
<b>By age</b>		
20–44	371,000	3.6
45–64	892,000	12.0
65 years or older	400,000	11.5

Source: 2010–2012 National Health Interview Survey, 2009–2012 National Health and Nutrition Examination Survey, and 2012 U.S. Census data.

## THE [CONTINUING] EPIDEMIC

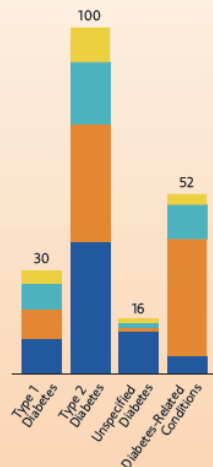
### Treatment of diabetes among people aged 18 years or older with diagnosed diabetes, United States, 2010–2012

	Number of adults using diabetes medication* (millions)	Percentage using diabetes medication (unadjusted)
Insulin only	2.9	14.0
Both insulin and oral medication	3.1	14.7
Oral medication only	11.9	56.9
Neither insulin nor oral medication	3.0	14.4

\*Does not add to the total number of adults with diagnosed diabetes because of the different data sources and methods used to obtain the estimates.

Source: 2010–2012 National Health Interview Survey.

#### Medicines in Development For Diabetes



#### MEDICINES IN DEVELOPMENT FOR DIABETES

BIOPHARMACEUTICAL RESEARCH  
COMPANIES ARE DEVELOPING

**180 MEDICINES**  
TO TREAT  
TYPE 1 & TYPE 2 DIABETES

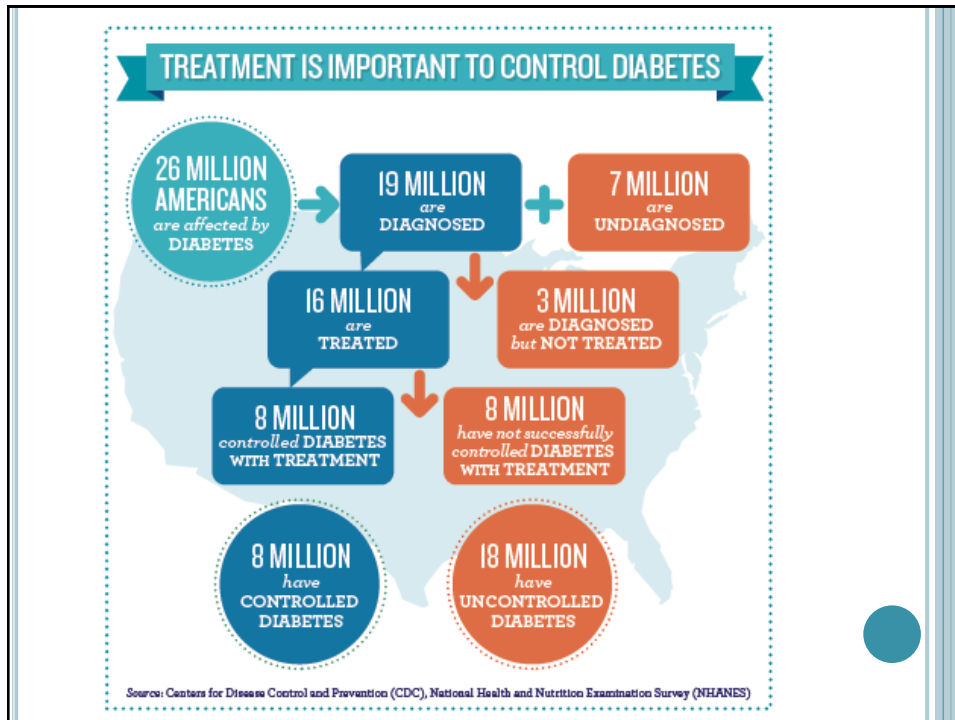


INCLUDING  
**128** FOR DIABETES

– AND –  
**52** FOR DIABETES-RELATED  
CONDITIONS



Source: PhRMA, 2014 Medicines in Development for Diabetes



## DIABETES CLASSIFICATIONS

- Type 1
  - Insulin-dependent
  - Beta cells in pancreas are destroyed; no prevention/cure
  - Typically diagnosed in mid-teens; can be diagnosed at any age; small percent of all diabetic cases
- Type 2
  - 90%-95% of all adult cases are type 2
  - Can be insulin resistance or beta cell dysfunction or both
- Gestational
  - Form of glucose intolerance precipitated by stress of pregnancy
  - 5%-10% continue with diabetes diagnosis
  - Even if resolved after the birth lifetime risk is higher
- Other causes (small percent); select genetic conditions, pancreatic disease, medications, infections, trauma and other illnesses.

## PREDIABETES OR METABOLIC SYNDROME?

### ○ Prediabetes

- Defined by condition of high BG or hemoglobin A1c
  - Level does not meet diagnosis criteria

### ○ Metabolic Syndrome\*

- 3 of 5 symptoms

Impaired Fasting BG	≥100 mg/dL
Waist Circumference	Men ≥40" / women ≥35"
Blood Pressure	>130/85 mm Hg
HDL-cholesterol	Men <40 mg/dL / Women <50 mg/dL
Triglycerides	≥150 mg/dL

- **Bottom Line: this is point in time to reduce risk by improving diet, activity and weight (if needed)**

\*Source: May 2014 American Heart Association accessed on-line October 2014

## THE HEALTH 'FALL-OUT'

### Diabetes concerns:

- Hypoglycemic crisis
  - 282,000 ER visits in 2011
- Hyperglycemic crisis (diabetic ketoacidosis [DKA] or hyperglycemic hyperosmolar state [HHS])
  - 175,000 ER visits in 2011
    - 2,361 deaths in 2010
- Hypertension .... 71%
- Elevated LDL ... 65%
- 1.7x higher risk for CVD
- 1.8x higher risk for heart attack
- 1.5x higher risk for stroke

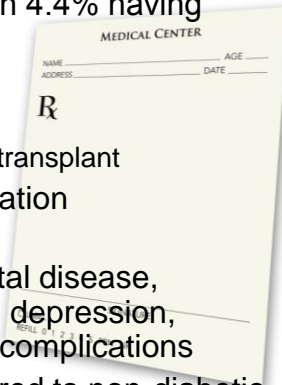


American Diabetes Association

## THE HEALTH 'FALL-OUT'

Diabetes concerns *continued*:

- Diabetic retinopathy ... 28.5% with 4.4% having advanced retinopathy
- Primary cause of kidney failure
  - 44% of all new cases in 2011
  - >228,000 on dialysis or living post-transplant
- 60% of non-traumatic limb amputation
  - 73,000 amputations in 2010
- Nerve disease, NFALD, periodontal disease, hearing loss, erectile dysfunction, depression, fertility difficulties and pregnancy complications
- 1.5x greater risk for death compared to non-diabetic



American Diabetes Association

## GUIDELINES FOR CONTROL

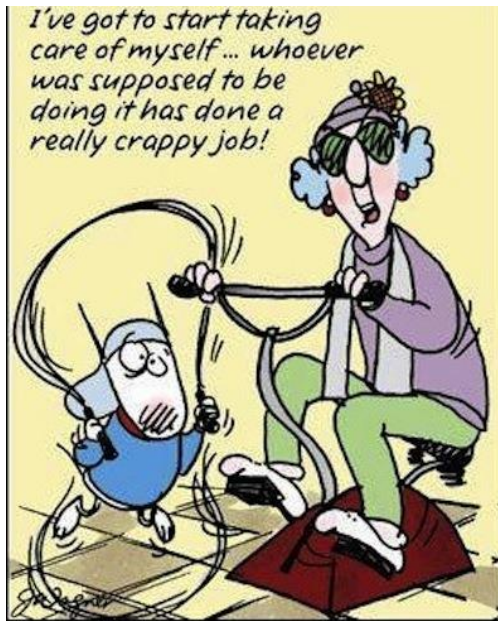
	American Diabetes Assoc. Goals
<b>HbA1c</b>	<b>&lt; 7.0%</b> ( <i>individualize</i> ) <b>&lt;7.5%-8%</b> for older adult if <7% is not realistic
<b>Preprandial glucose</b>	<b>70-130 mg/dL</b> (3.9-7.2 mmol/l)
<b>Random glucose</b>	<b>&lt;200 mg/dL</b>
<b>Blood pressure</b>	<b>&lt;130/80 mmHg</b> (or <140/80 mmHg)
<b>Lipids</b>	<b>LDL: &lt;100 mg/dL</b> (2.6 mmol/l) <b>&lt;70 mg/dL</b> (1.8 mmol/l) ( <i>with overt CVD</i> ) <b>HDL: &gt;40 mg/dL</b> (1.0 mmol/l) ( <i>men</i> ) <b>&gt;50 mg/dL</b> (1.3 mmol/l) ( <i>women</i> ) <b>TG: &lt;150 mg/dL</b> (1.69 mmol/l)

HDL = high-density lipoprotein; LDL = low-density lipoprotein; PG = plasma glucose; TG = triglycerides.

ADA. *Diabetes Care*. 2014;37:S5-13.

## THE ULTIMATE GOAL WITH DIABETES

- Keeping blood sugars as close to normal
  - Slows onset and progression of comorbidities
  - It is never too late for control!

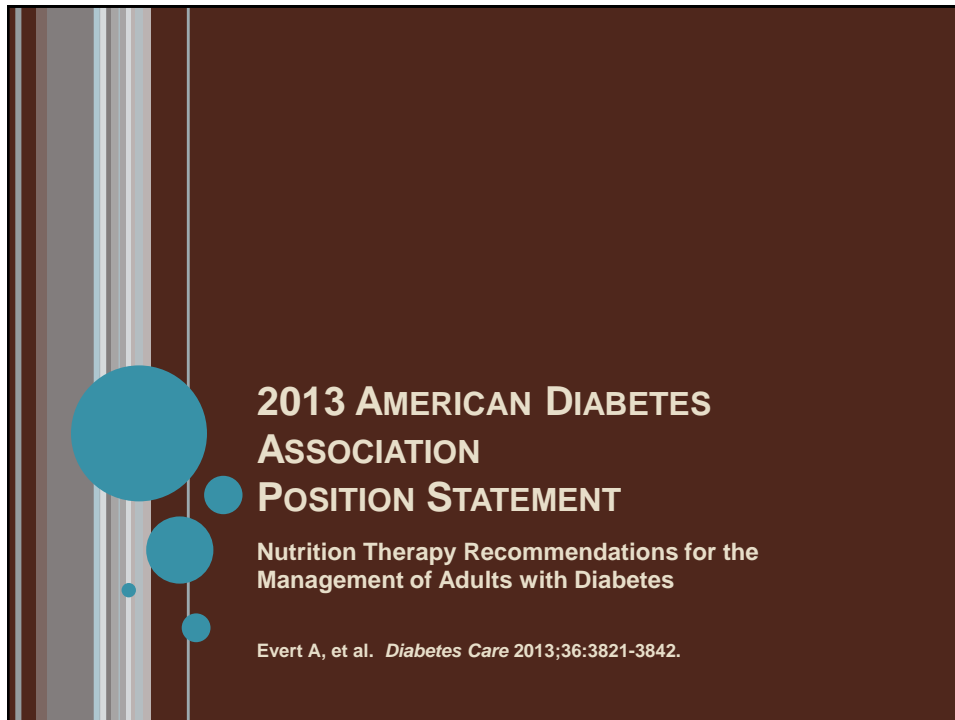


**Diabetes care  
is a lifestyle!**

**Diet  
Activity &  
Medication  
Routines**

**Everyday,  
forevermore**





## KEY TO GRADING

- A = Clear evidence or supportive evidence from well-conducted, generalizable, randomized controlled trials that are adequately powered
- B = Supportive evidence from well-conducted cohort studies or well-conducted case-control study
- C = Supportive evidence from poorly controlled or uncontrolled studies
- E = Expert consensus or clinical experience



## NUTRITION THERAPY



- Promote & support healthful eating patterns, portion sizes and food choices.
  - Manage biochemical markers (e.g. BG, BP, etc.)
  - Achieve and maintain body weight goals
  - Delay/prevent complications of diabetes
- Address each individual's needs
- Maintain the pleasure of eating
- Provide practical tools for meal planning – all foods in moderation

👍 Effectiveness of medical nutrition therapy for all people with diabetes carries an A (highest) evidence rating.

## NUTRITION THERAPY RECOMMENDATIONS

- |                     |   |
|---------------------|---|
| ○ Energy balance    | <ul style="list-style-type: none"> <li>○ Reduce energy to promote weight loss (A)</li> <li>○ Modest weight loss (5-10%) improves health (A)</li> </ul>                              |
| ○ Macronutrient mix | <ul style="list-style-type: none"> <li>○ No 'specifics' (B); individualize meal plan (E)</li> </ul>   |
| ○ Eating patterns   | <ul style="list-style-type: none"> <li>○ Individualize (E)</li> </ul>   |
| ○ Carbohydrates     | <ul style="list-style-type: none"> <li>○ No ideal amount (C)</li> <li>○ Match to insulin (A)</li> <li>○ Monitor CHO intake (B)</li> <li>○ Use variety of CHO sources (B)</li> </ul> |

## NUTRITION THERAPY RECOMMENDATIONS

- |                                |   |
|--------------------------------|---|
| ○ Glycemic index / load        | ○ These foods may modestly improve control (C)  |
| ○ Dietary fiber & whole grains | ○ Target general guidelines (C)   |
| ○ Sub of sucrose for starch    | ○ <del>Sucrose okay but watch</del> displacing nutrient dense foods (A)   |
| ○ Fructose                     | ○ Naturally occurring fructose not likely to affect TG at <12% energy (B, C)<br>○ Avoid SSBs to ↓ risk of weight gain and cardio risk (B) |

## NUTRITION THERAPY RECOMMENDATIONS

- |  |  |
|--|--|
| ○ Non-nutritive & hypocaloric sweeteners | ○ May ↓ overall kcal & CHO intake (B)  |
| ○ Protein                                | ○ Individualize intake (C)<br>○ With DM or DM & CKD ↓ protein does not alter BG, CV risk or GFR decline (A)<br>○ Protein may ↑ insulin response w/o ↑ plasma glucose (B) |
| ○ Total fat                              | ○ Individualize (C); quality fat most important vs. qty (B)  |
| ○ MUFAs/PUFAs                            | ○ Mediterranean style diet, MUFA-rich may benefit BGC and CVD risk factors (B)   |

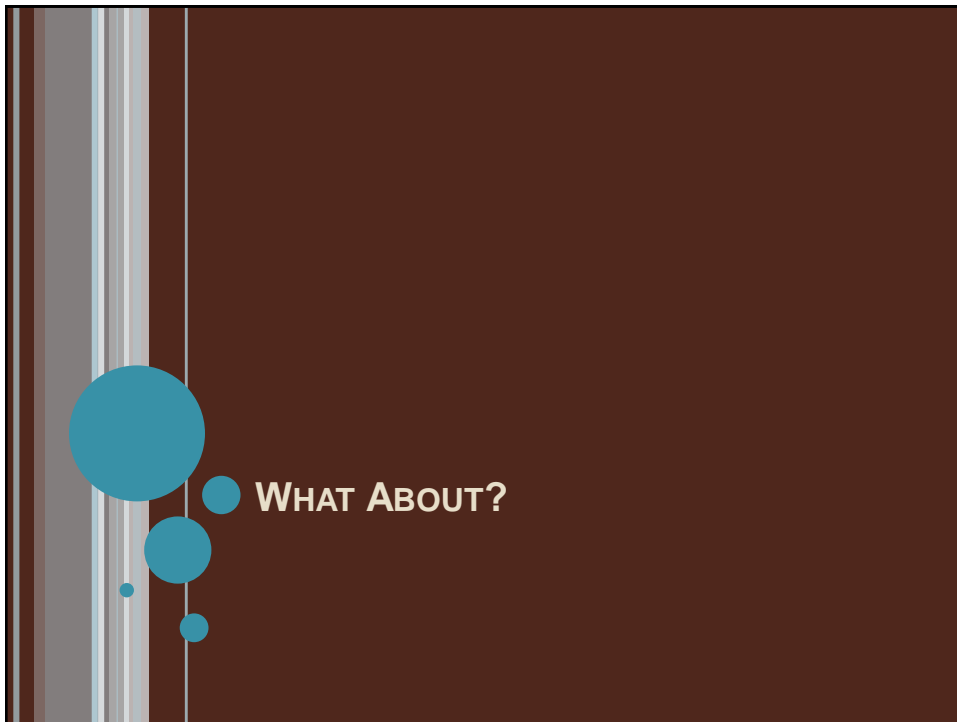
## NUTRITION THERAPY RECOMMENDATIONS

○ Sat. fat, trans fat & cholesterol	○ Target amounts same as general population (C)
○ Plant stanols / sterols	○ 1.6-3g/day may modestly ↓ total & LDL cholesterol (C)
○ Micronutrients & herbal supplements	○ No benefit for V/M w/o deficiency (C)
○ Alcohol	○ Alcohol in moderation (E) ○ May ↑ risk for delayed hypoglycemia (C)
○ Sodium	○ Target amount (<2.3g/d) same as general popu. (B) ○ With HTN; individualize (B)

## BOTTOM LINE

- Promote healthy eating (& activity)
  - Portion control
  - Variety → all food groups
  - Whole, natural foods
    - Limit processed foods
  - Adequate hydration
  - Maintain a normal weight





**A carbohydrate is  
a carbohydrate  
is a  
carbohydrate...**

## IT'S ABOUT CARBOHYDRATES (CHO)

- Only carbohydrates directly impact blood sugar
  - Also fat deposition from excess
- All carbohydrate types affect blood sugar
  - Mixed meals slow absorption
  - Fiber slows absorption
  - Complex carbohydrates are slower to reach bloodstream than simple sugars
    - Whole fruits, veggies, whole grains, legumes, dairy
- Total CHO eaten is #1 predictor of BG response
  - Tracking quantity of CHO eaten is important
    - 1 CHO choice = 15 grams [any] CHO
  - Target same # of CHO's each meal each day



## WHAT ABOUT "NET" CARBS?

- Also called "digestible carbs"
- 'Net Carb' has no "legal" definition
  - Not endorsed by ADA
- Total carbohydrate grams
  - Fiber grams
  - Sugar Alcohol grams
  - = Net Carb grams
- Could underestimate carbohydrate consumption
- Bottom Line: not advisable per ADA

Nutrition Facts	
Serving Size: 11 fl oz	
Amount Per Serving	
Calories 290	Calories from Fat 100
% Daily Value*	
Total Fat 11 g	17%
Saturated Fat 1 g	5%
Trans Fat	
Cholesterol	
Sodium 280 mg	12%
Potassium	
Total Carbohydrate 39 g	13%
Dietary Fiber 4 g	16%
Sugars 10 g	
Sugar Alcohols 7 g	
Protein 13 g	

## HOW MANY CARBS DO WE REALLY NEED?

- No “ideal” amount – individualize
  - Usually 40-50% of calories
- What about 120-130 CHO g/day is the minimum to protect brain function?\*
- Based on CMRg of healthy adult
  - Diabetes can interfere
- Brain does not ‘store’ extra energy
- Maintaining normal BG level protects needs of brain
- Bottom Line: ~1,200 kcal / day is minimum to meet all basic nutrient needs



CMRg = cerebral metabolic rate of glucose

\*Cunnane SC et al. *Nutrition*. 2011;27:3-20

## CALCULATING CARBOHYDRATES

1. Determine total calorie goal
  2. Decide on Protein g/kg BW
  3. Fat %
  4. Balance goes to Carbohydrates
- Typically
    - 3-4 (45-60 grams) CHO choices per meal
    - 1-2 (15-30 grams) CHO choices per snack (if snacking)
  - Snacking generally not a good idea with insulin resistance
  - ‘Always’ eat carbs with protein and fat – slows absorption; moderates postprandial BG

Female: 5'5" (1.65m) 170# (77.3kg)

	Current	Rev. for Wgt Loss	After Wgt Loss
Calories:	2300	1800	1600
Pro 1.25g/kg	95g (16.5%)	95g (21%)	82g (21%)
CHO	308g (53.5%)	220g (49%)	198g (50%)
<i>CHO Choices</i>	20	15	13
Fat	77g (30%)	60g (30%)	53g (30%)



## IS FRUCTOSE GOOD OR BAD? EITHER OR NEITHER?

- Fructose is a carbohydrate
  - Metabolized (in the liver) like fat
    - Does not raise blood glucose
- Accused of:
  - Direct link to obesity (esp. HFCS)
  - Not suppressing ghrelin
  - Not stimulating insulin
  - ↑g risk for gout (↑ uric acid)
    - ↑ Uric acid interferes with NO that helps control BP
  - ↑ risk for NAFLD
    - Excess intake does ↑ TG but assoc. to NFLD is not well understood

### Evidence Reminder:

-Naturally occurring fructose not likely to affect TG at <12% energy (B, C)

-Avoid SSBs to ↓ risk of weight gain and cardio risk (B)

Complex....complex.....complex.....complex.....

- Any excess monosaccharide can end up as (bad) lipoproteins
- Individuals react differently to fructose
- **Bottom Line: a high sugar diet = high fat diet; limit sugary foods including SSBs**

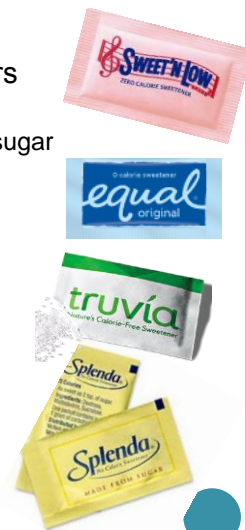
Sun SZ and Empie MW. Nutrition & Metabolism. 2012;9:89-103



- NNS includes 'no' and 'low' calorie sweeteners
- Options:
  - Saccharin 300 x sweeter than sugar
  - Aspartame (Equal®) 160-200 x
  - Acesulfame K 200 x
  - Sucralose (Splenda®) 600 x
  - Neotame 8,000 x
  - Stevia® (Sweet Leaf™) 250 x

- Attraction: ↓ calories to ↓ weight gain
  - Excess weight prevention and treatment tool
  - ↓ carbohydrates central to treating DM
    - NNS replaces some carbs
    - Do not raise BG
    - Safe alternative to natural sugars

Johnston CA et al. *US Endocrinology*. 2013;9:13-15



## WHAT ABOUT NON-NUTRITIVE SWEETENERS (NNS)?

- Increasing appetite
  - Overcompensation for saved calories → eat more?
  - NNS don't have the satiety of sucrose?
  - **Bottom Line: data does not support either theory**
- NNS cause weight gain
  - Based on animal and epidemiology studies → no clinical evidence
  - RCT human data finds no evidence that NNS ↑ weight
    - Suggest opposite → ↑ adherence to lower-calorie diets
  - **Bottom Line: NNS are a tool to help manage weight**
- Some people sensitive to some types (e.g. aspartame)
- More recently, concern that NNSs may ↓ beneficial GI microflora\*
  - **Bottom Line: Some people many have issues → don't use NNS**

Johnston CA et al. *US Endocrinology*. 2013;9:13-15  
 \**Nature* 2014; 514:181-186



## WHAT ABOUT SUGAR ALCOHOLS?

Sugar Alcohol	Calories/ Gram
<b>SUGAR</b>	<b>4.0</b>
HSH*	3.0
Sorbitol	2.6
Xylitol	2.4
Maltitol	2.1
Isomalt	2.0
Lactitol	2.0
Mannitol	1.6
Erythritol	0.2

\*Hydrogenated starch hydrolysates

Source: International Food Information Council

- Replace a portion of carbohydrate
- Provide fewer calories
- Are incompletely absorbed
- Warning: GI side effects with more than 10 grams (sometimes less)

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## WHAT ABOUT ALCOHOL?

- Non-drinkers...no need to start!
  - Non-nutritive calories; weight gain; abuse/addiction
- Guideline:  $\leq 1$  drink/d women;  $\leq 2$  drinks/d men (E)
- Alcohol may help lower A1c levels
  - FBG levels by 9%↓ with ~1 serving (13g) /d
  - Mechanism: suppresses gluconeogenesis or enhances insulin secretion by up-regulating anti-inflammatory genes
- Alcohol may be protective against type 2
  - Type 2 usually insulin resistant with impaired hepatic glucose production
- Alcohol associated with ↓ risk of CHD
  - Daily 5 oz. of red wine may be cardio protective



Trast and Ramchandani. *Pract Diabet*. 2012;31:18-22.

## WHAT ABOUT ALCOHOL?

Alcoholic Beverage	Serving Size	Count As:
Beer	12 fl. oz.	
Light (4.2%)		1 alcohol equivalent + ½ carb
Regular (4.9%)		1 alcohol equivalent + ½ carb
Vodka, rum, whiskey, gin	1 ½ fl. oz.	
80 Or 86 proof		1 alcohol equivalent*
Sake	1 fl. oz.	½ alcohol equivalent
Wine		
Sherry	3 ½ fl. oz.	1 alcohol equivalent + 1 carb
Dry, red or white	5 fl. oz.	1 alcohol equivalent

\* Plus any carbs from the mixer (regular soda, fruit juices, etc.) and garnishes (fruit wedges, etc.)

## WHAT ABOUT ALCOHOL?

- Caution: ↑ risk for delayed (hours) hypoglycemic episode [esp. w/ insulin or sulfonylurea Rx]
  - Symptoms are similar to being “drunk”
- Ranked: wine, beer, spirits
- Bottom Line: “no harm” with:
  - Limit the drink to 1-2 ... more is not ‘better’
  - Be/stay hydrated
  - Drink with meal vs. alone
  - Check / know BG levels



Trast and Ramchandani. *Pract Diabet.* 2012;31:18-22.

## WHAT ABOUT CINNAMON?

- *Cinnamomum Cassia*
  - Bark; sourced from tropical evergreen tree
- Mechanism: contains a compound that stimulates insulin receptors helping to improve removal of BG from blood into cells
- 1gm (~1/2 tsp)/day ↓fasting BG and lipids w/ no significant change to A1c
  - ¼ tsp - 1 ¾ tsp (120 mg – 6g/d) studied
  - ↓ FBG, TC, LDL, TG; ↑ HDL-C; n/c A1c
  - More research needed
- Caution:
  - Cinnamon contains a coumarin compound – evaluate use with anticoagulants
  - Excessive amounts could cause contact dermatitis
  - Beware of cinnamon oils...some are not for oral consumption
- Bottom Line: minimal risk with potential for small benefits



Shane-McWhorten, L. *Diabetes Spectrum.* 2009;22:208.  
Allen RW et al. *Ann Fam Med.* 2013;11:452-459.

## WHAT ABOUT CHROMIUM (CR)?

- Chromium picolinate vs. other sources of Cr
  - All types included in studies
- 200 mcg/day typical supplement dose
  - RDI 20-30mcg/d (less for women than men)
  - Typical diet generally adequate
- *"One small study suggests that chromium picolinate may reduce the risk of insulin resistance, and therefore possibly may reduce the risk of type 2 diabetes. FDA concludes, however, that the existence of such a relationship between chromium picolinate and either insulin resistance or type 2 diabetes is highly uncertain."*  
Says the FDA
  - "Evidence inconclusive" says the ADA



Abdollahi M et al. *J Pharm Pharmaceut Sci* 2013;16:99-114  
 Bailey CH. *Biol Trace Elem Res.* 2014;157:1-8.  
 Shane-McWhorten, L. *Diabetes Spectrum.* 2009;22:207-208.

## WHAT ABOUT CHROMIUM (CR)?

- Mechanism: enhances action of insulin; involved in metabolism of macro nutrients
- Caution: renal toxicity with large doses
  - Up to 1000 mcg/day for 64 months w/o adverse effect
- **Bottom Line: minimal risk with potential for small benefits**



Abdollahi M et al. *J Pharm Pharmaceut Sci* 2013;16:99-114  
 Bailey CH. *Biol Trace Elem Res.* 2014;157:1-8.  
 Shane-McWhorten, L. *Diabetes Spectrum.* 2009;22:207-208.

Note: not all  
inclusive details

## WHAT ABOUT ALL THE HERBALS?

→ Based on smaller studies of short durations

	What it is	What it Does	Dose?	Take it?
Agaricus Mushroom	Mushroom	↑ serum adiponectin that ↓ insulin resistance in T2	?	Low risk
Aloe (gel part inside leaf)	Plant	↓ fasting BG	15 mL @ 2x/d	Low risk; d/c prior to surgery
Banaba extract (Glucosol)	Plant	↓ BG	?	Low risk
Bilberry	Berry plant	↓ BG, TG, TC	Only animal trials	??
Bitter Melon	Vegetable	↓ BG and A1c	1 g @ 3x/d Or 50-150mL /d	Low risk; <u>not</u> for the pregnant

Camiel LD and Goldman-Levine J. *Pract Diabet*. 2013;32:25-30.  
Shane-McWhorten, L. *Diabetes Spectrum*. 2009;22:208.

Note: not all  
inclusive details

## WHAT ABOUT ALL THE HERBALS? CONT.

	What it is	What it Does	Dose	+ / - / =
Chia	Seed	↓ A1c	37 g/d	Low risk
Fenugreek	Seed portion	↓ pp BG	10-15 g/d	Low risk; GI upset more common
Ginseng	Plant root	↓ CHO absorption & modulate insulin secretion	200 mg /d	Mild risk – many neg. interactions possible
Konjac (Glucomannan)	Plant fiber	Improves insulin resistance ↓ pp BG & A1c		Low risk; fiber related GI upset possible
Gymnema	Plant extract	↓ FBG and A1c	400 mg /d	Low risk

Camiel LD and Goldman-Levine J. *Pract Diabet*. 2013;32:25-30.  
Shane-McWhorten, L. *Diabetes Spectrum*. 2009;22:208.

Note: not all  
inclusive details

## WHAT ABOUT ALL THE HERBALS? CONT.

	What it is	What it Does	Dose	+ / - / =
Holy Basil (or Hot Basil)	Plant	↓ pp BG & FBG	?	Low risk
Milk Thistle	Plant	Improves insulin resistance; ↓ BG & A1c	100 or 200 mg @3x/d pending type	Low risk; some GI discomfort; can be an allergen
Oat Bran	Plant	↓ CHO absorption for ↓ pp BG	Part of daily fiber	Low risk
Prickly Pear Cactus	Plant	↓ CHO absorption for ↓ BG	100-500g /d of broiled stems	Low risk; some GI discomfort
Blond Psyllium (as in Metamucil®)	Plant	↓ CHO absorption for ↓ pp BG	Part of daily fiber	Low risk; some GI discomfort

Note: not all  
inclusive details

## WHAT ABOUT ALL THE HERBALS? CONT.

	What it is	What it Does	Dose	+ / - / =
Pycnogenol	Tree bark extract	↓ BG & A1c	?	Low risk; some balance & GI concerns
Soy(bears)	Plant	Improves insulin resistance; ↓ BG & A1c	As whole foods in diet	Low risk
Stevia	Plant	↓ pp BG	?	Low risk; some headache & GI concerns
White Mulberry	Tree fruit	↓ CHO absorption for ↓ pp BG & FBG	?	Low risk

Camiel LD and Goldman-Levine J. *Pract Diabet*. 2013;32:25-30.  
Shane-McWhorten, L. *Diabetes Spectrum*. 2009;22:208.

## DIETARY SUPPLEMENT CAUTIONS

- Always inform MD (or PharmD) of dietary supplement use and dose
- Multiple supplements could have cumulative effect
  - ↑ concern for hypoglycemia
  - Possible food-drug interactions
- Source of supplement should be reputable
  - No FDA oversight re: quality
- Bottom Line: may be okay...work with individual, remind them to speak to MD/PharmD and track BG for hypoglycemia



## WHAT ABOUT “DIABETIC” FORMULAS?

- Oral or Tube fed
- Market ‘improved glucose control’
  - Typically reduced in carbohydrates (30-40% but higher in protein (15-30%) and fat (40-50%)
  - May include nutrients like chromium picolinate

Research says:

- Can reduce need for insulin by 26-71%
  - Fewer (ouch) shots, less Rx costs
- Can reduce glycemic variability
  - Indp. risk factor for morbidity / mortality



Elia M et al. *Diabetes Care* 2005;28:2267–2279.



## WHAT ABOUT “DIABETIC” FORMULAS?

Research says *cont.*:

- Does not reduce LOS, infections, mortality
- Reductions in FBG, A1c, insulin are not “clinically significant”
- Studies not long enough to assess typical higher fat content of diabetic-specific formulas
- Clinical benefits remain unclear
  - Diabetic-specific formulas not recommended by any professional organizations
- Bottom Line: in absence of clear guidance dietitian should assess risk : benefit by patient/resident

Mesejo A et al. *Clin Nutr.* 2003;22:295-305.

Chen Y and Peterson SJ. *Nutr Clin Pract.* 2009;24:344-355.

## BOOKMARKS

- 2014 ADA Clinical Practice Recommendations  
<http://professional.diabetes.org/ResourcesForProfessionals.aspx?cid=84160>
- Office of Dietary Supplement <http://ods.od.nih.gov/>

## IN CONCLUSION

- The goal of diet and lifestyle is to promote normal blood glucose levels.
- Managing carbohydrate intake is key.
- Novel nutrients, herbs and supplements may have a role in diabetes management.
- The diet for diabetes is highly individualized.



## SELECT REFERENCES

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## POST-TEST

1. Which of the following is the goal of nutrition therapy for diabetes?
  - a) Promote & support healthful eating patterns, portion sizes and food choices
  - b) Address each individual's needs
  - c) Maintain the pleasure of eating
  - d) Provide practical tools for meal planning
  - e) All of the above
2. How many 'carb choices' are in a daily target of 268g of carbohydrates?
  - a) 14
  - b) 16
  - c) 18
  - d) 20
3. Carbohydrates should equal 50% of a person's daily total calorie intake.
  - a) True
  - b) False



*Your Special Diet Partner*

**THANK YOU FOR PARTICIPATING IN TODAY'S  
SESSION!**

This presentation is intended to provide general information about diabetes  
but is not intended to provide medical advice.

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Post-test Answers: 1 = E, 2 = C, 3 = False