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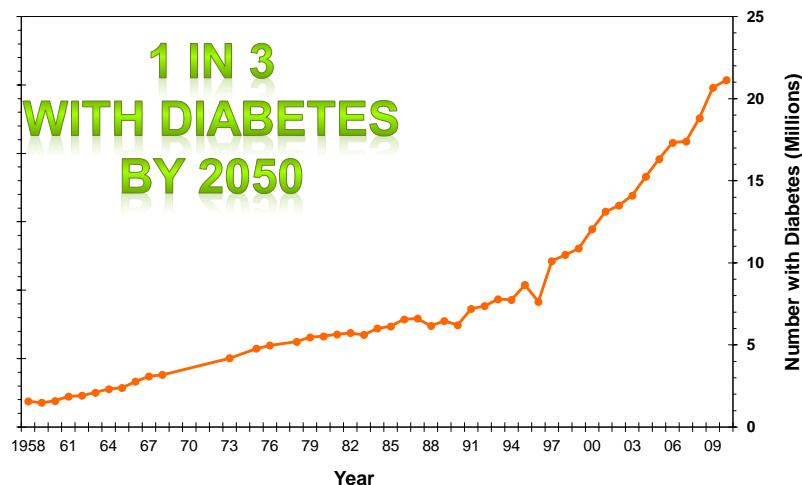
GOOD TO KNOW: ABOUT DIABETES



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)
Total		
20 years or older	28.9	12.3
By age		
20–44	4.3	4.1
45–64	13.4	16.2
65 years or older	11.2	25.9
By sex		
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)
Total		
20 years or older	1.7 million	7.8
By age		
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

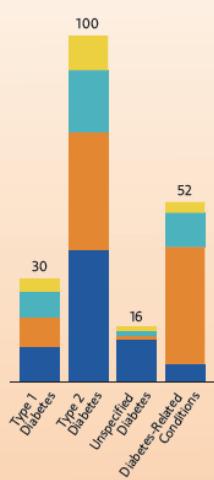
	Number of adults using diabetes medication* (millions)	Percentage using diabetes medication (unadjusted)
Insulin only	2.9	14.0
Both insulin and oral medication	3.1	14.7
Oral medication only	11.9	56.9
Neither insulin nor oral medication	3.0	14.4

*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

- Application Submitted
- Phase III
- Phase II
- Phase I



MEDICINES IN DEVELOPMENT FOR DIABETES

BIOPHARMACEUTICAL RESEARCH COMPANIES ARE DEVELOPING

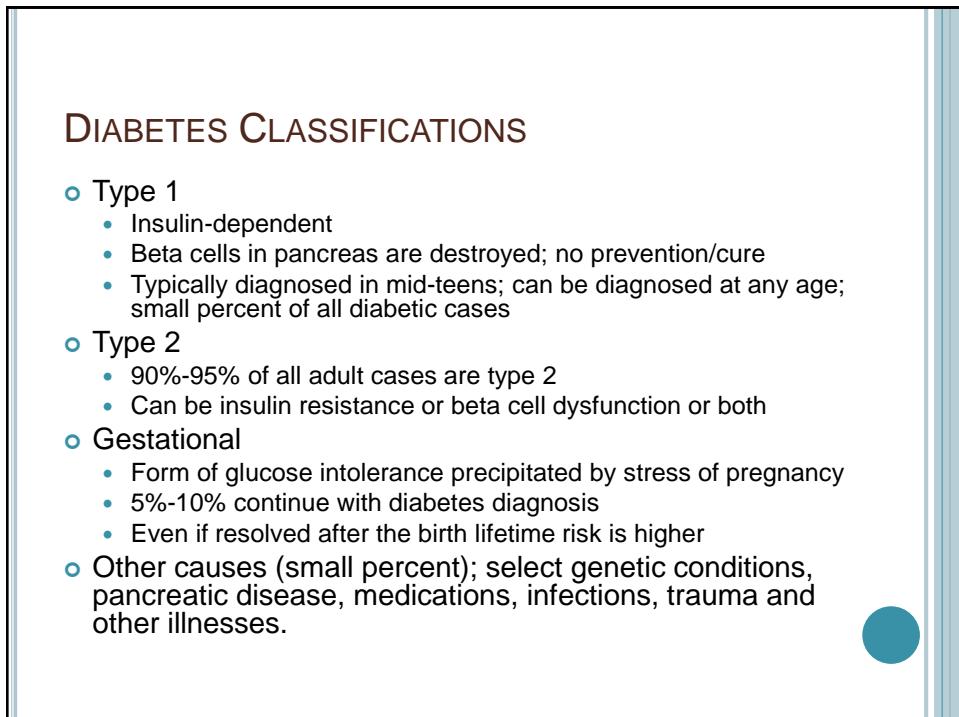
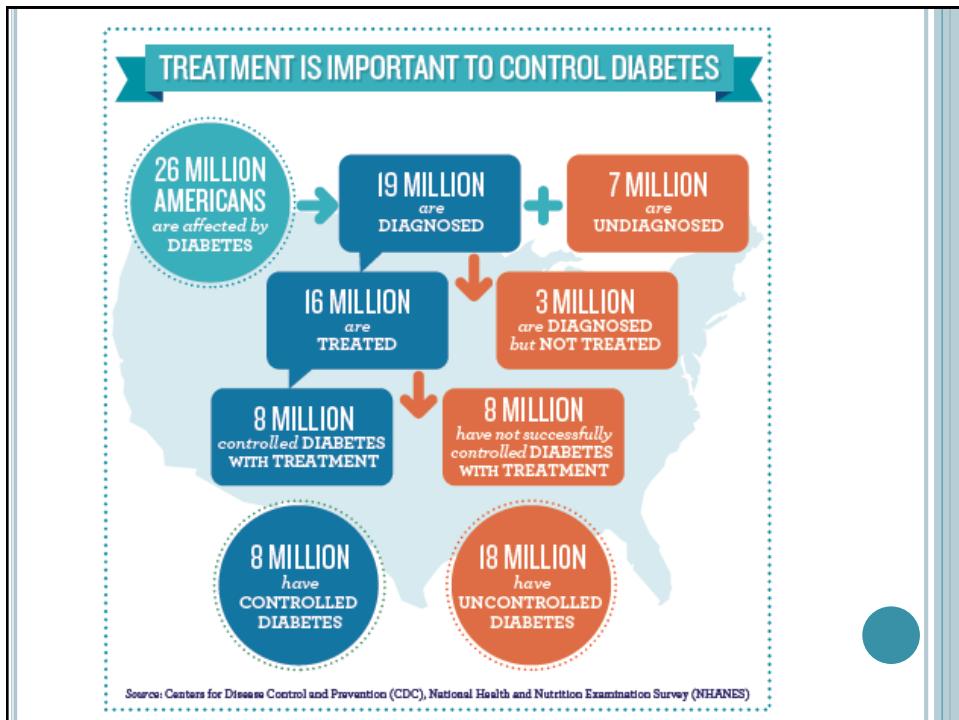
180 MEDICINES
TO TREAT
TYPE 1 & TYPE 2 DIABETES



INCLUDING
128 FOR DIABETES
- AND -
52 FOR DIABETES-RELATED CONDITIONS



Source: PhRMA, 2014 Medicines in Development for Diabetes



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

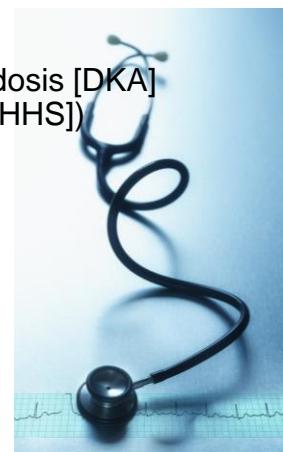
- Bottom Line: this is point in time to reduce risk by improving diet, activity and weight (if needed)

*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

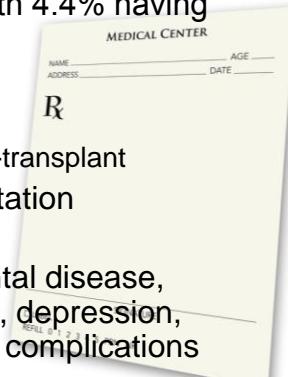


American Diabetes Association

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

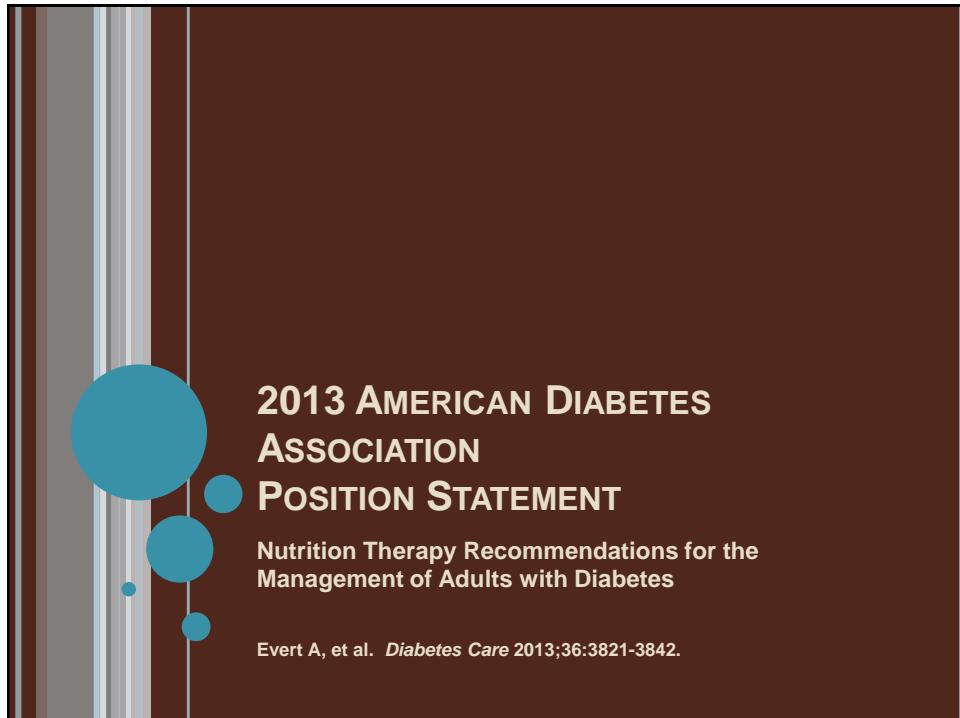
- Keeping blood sugars as close to normal
 - Slows onset and progression of comorbidities
 - It is never too late for control!



**Diabetes care
is a lifestyle!**

**Diet
Activity &
Medication
Routines**

**Everyday,
forevermore**



**2013 AMERICAN DIABETES
ASSOCIATION
POSITION STATEMENT**

**Nutrition Therapy Recommendations for the
Management of Adults with Diabetes**

Evert A, et al. *Diabetes Care* 2013;36:3821-3842.



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	○ Reduce energy to promote weight loss (A)
○ Macronutrient mix	○ Modest weight loss (5-10%) improves health (A)
○ Eating patterns	○ No 'specifics' (B); individualize meal plan (E)
○ Carbohydrates	○ Individualize (E)
	○ No ideal amount (C)
	○ Match to insulin (A)
	○ Monitor CHO intake (B)
	○ Use variety of CHO sources (B)

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	○ Sucrose okay but watch displacing nutrient dense foods (A)
○ Fructose	○ Naturally occurring fructose not likely to affect TG at <12% energy (B, C) ○ 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) ○ With DM or DM & CKD ↓ protein does not alter BG, CV risk or GFR decline (A) ○ 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)

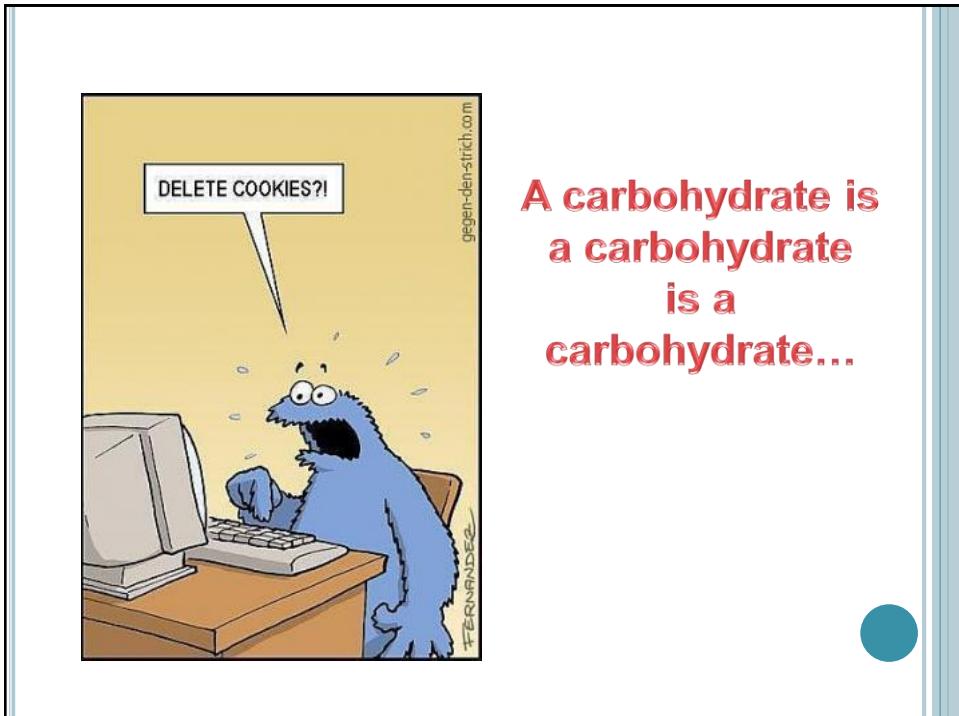
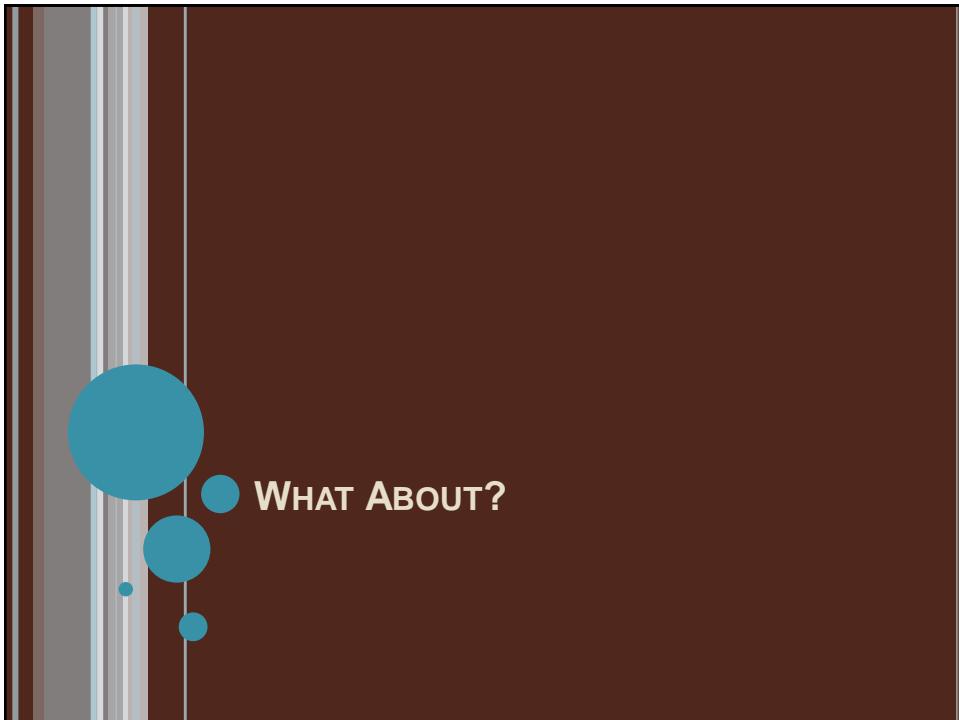
NUTRITION THERAPY RECOMMENDATIONS

○ 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





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



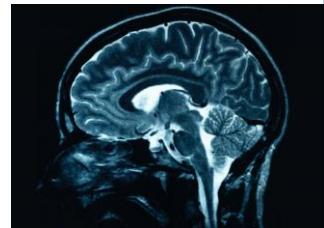
WHAT ABOUT “NET” CARBS?

- 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%)
CHO Choices	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:

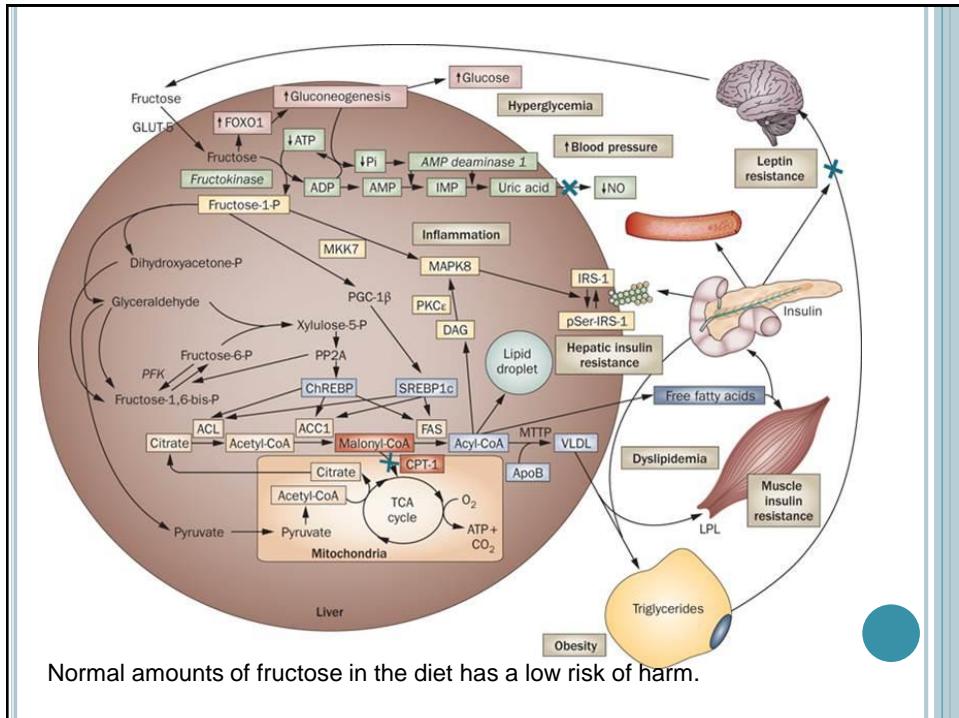
- Naturally occurring fructose not likely to affect TG at <12% energy (B, C)
- Avoid SSBs to ↓ risk of weight gain and cardio risk (B)

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



WHAT ABOUT Non-NUTRITIVE SWEETENERS (NNS)?

- NNS includes 'no' and 'low' calorie sweeteners
- Options:
 - Saccharin
 - Aspartame (Equal®)
 - Acesulfame K
 - Sucralose (Splenda®)
 - Neotame
 - Stevia® (Sweet Leaf™)
- 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
SUGAR	4.0
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 then 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: ≤ 1 drink/d women; ≤ 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 Light (4.2%)	12 fl. oz.	1 alcohol equivalent + ½ carb
		1 alcohol equivalent + ½ carb
Vodka, rum, whiskey, gin 80 or 86 proof	1 ½ fl. oz.	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 is 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 is 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 is 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 is Does	Dose	+ / - / =
Pycnogenol	Tree bark extract	↓ BG & A1c	?	Low risk; some balance & GI concerns
Soy(beans)	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

1. Allen RW, et al. Cinnamon Use in Type 2 Diabetes: An Updated Systemic Review and Meta-Analysis. *Ann Fam Med.* 2013;11:452-459.
2. Bailey CH. Improved meta-analysis methods show no effect of chromium supplements on fasting glucose. *Biol Trace Elem Res.* 2014;157:1-8.
3. Camiel LD and Goldman-Levine J. Herbal Products for the Treatment of Type 2 Diabetes. *Pract Diabet.* 2013;32:25-30.
4. Chen Y and Peterson SJ. Enteral Nutrition Formulas: Which Formula is Right for Your Adult Patient? *Nutr. Clin Pract.* 2009;24:344-355.
5. Cunnane SC et al. Brain fuel metabolism, aging and Alzheimer's Disease. *Nutrition.* 2011;27:3-20.
6. Elia M et al. Enteral Nutritional Support and Use of Diabetes-Specific Formulas for Patients with Diabetes. *Diabetes Care* 2005;28:2267-2279.
7. Evert A, et al. Nutrition Therapy Recommendations for the Management of Adults with Diabetes. *Diabetes Care.* 2013;36:3821-3832.
8. Johnston CA, Stevens B, Foreyt JP. The Role of Low-calorie Sweeteners in Diabetes. *US Endocrinology.* 2013;9:13-15.
9. Mohammad A et al. Effect of Chromium on Glucose and Lipid Profiles in Patients with Type 2 Diabetes; A Meta-analysis Review of Randomized Trials. *J Pharm Pharmaceut Sci.* 2013;16:99-114.
10. Shane-McWhorter, L. Dietary Supplements for Diabetes: An Evaluation of Commonly Used Products. *Diabetes Spectrum.* 2009;22:208.
11. Sun SZ and Empie MW. Fructose metabolism in humans – what isotopic tracer studies tell us. *Nutrition & Metabolism.* 2012;9:89-103.
12. Trast J. and Ramchandani N. To Drink or Not To Drink? *Pract Diabet.* 2012;31:18-24.



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.

Presentation Author: Debra Zwiefelhofer, RDN, LD

Reviewed By: Jenny Mager, PhD, RD

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