Diabetes Fundamentals Nutrition and Exercise

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Diabetes Fundamentals

- Nutrition guidelines
  - Describe current MNT recommendations
  - List 3 teaching strategies to help patients succeed
- Exercise Guidelines
  - Discuss exercise goals for people with diabetes
  - Describe safety precautions

Good Resources

▸ Review Exchange List

▸ Review ADA Standards of Care:

Nutrition Therapy Recommendations for the Management of Adults With Diabetes
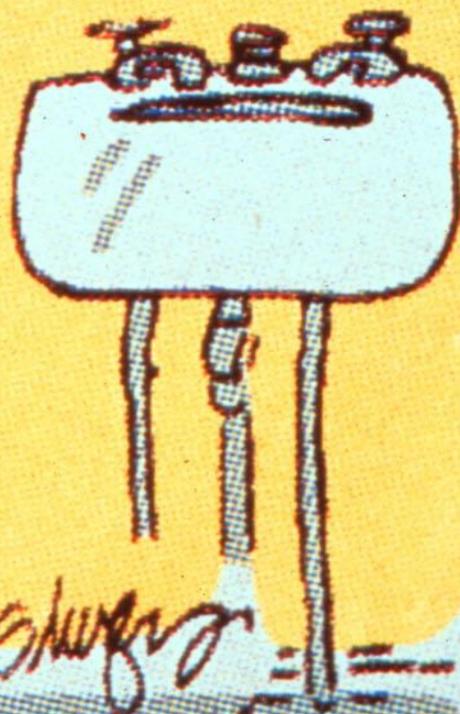
Reviews/Commentaries/ADA Statements

POSITION STATEMENT
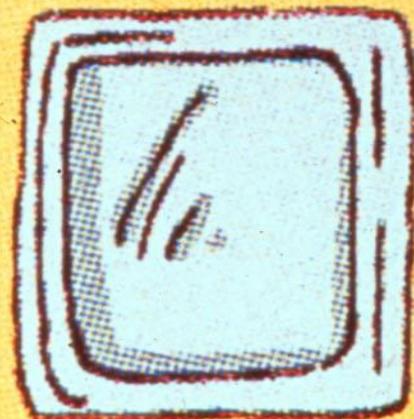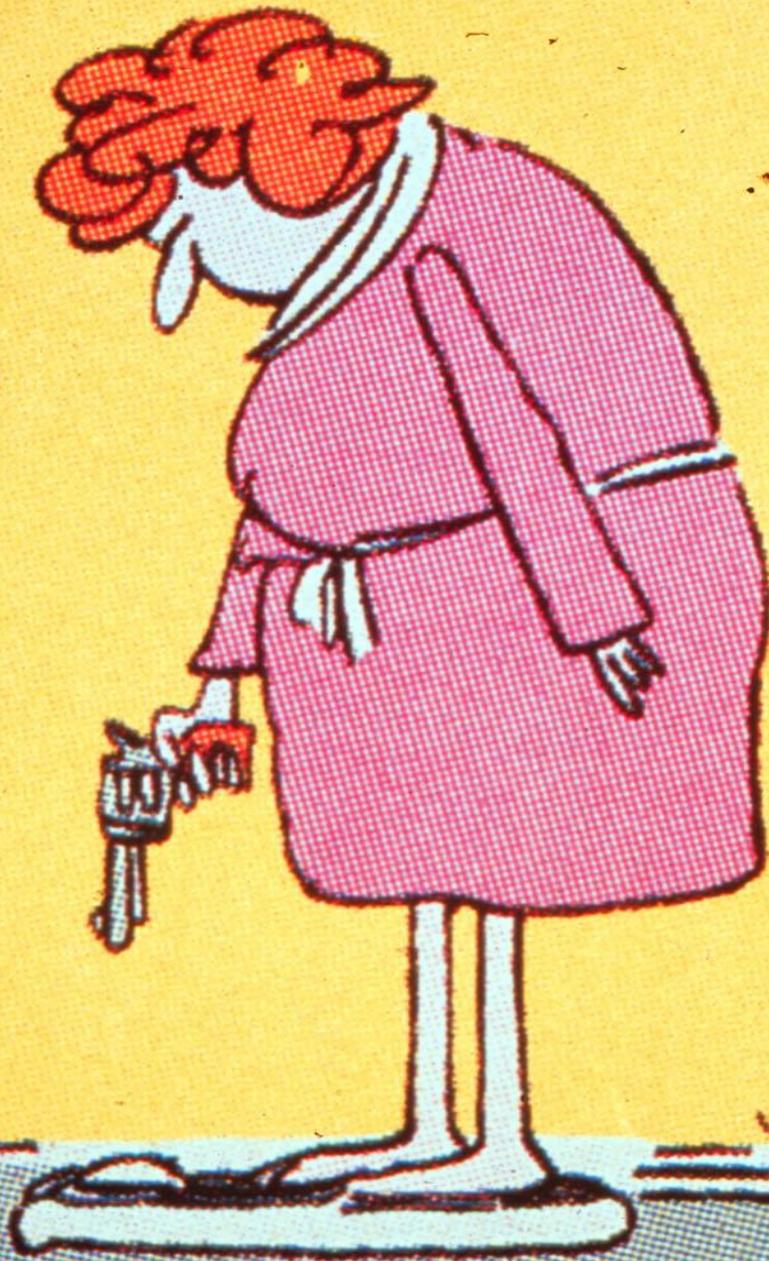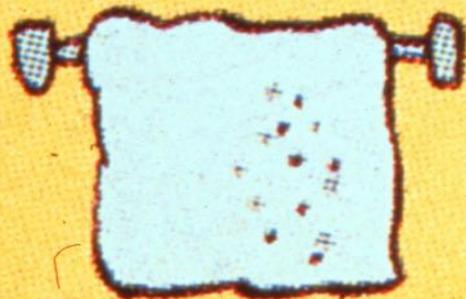
Exercise and Type 2 Diabetes

The American College of Sports Medicine and the American Diabetes Association: joint position statement

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disease (CVD), blindness, kidney and nerve disease, and amputation (261). Although regular physical activity (PA) may prevent or delay diabetes and its complications (10,46,89,112,176,208,259,294), most people with type 2 diabetes are not

Diabetes Education SERVICES

Obesity in America

Body Mass Index chart legend:
- Less than HS
- HS
- Some College
- College
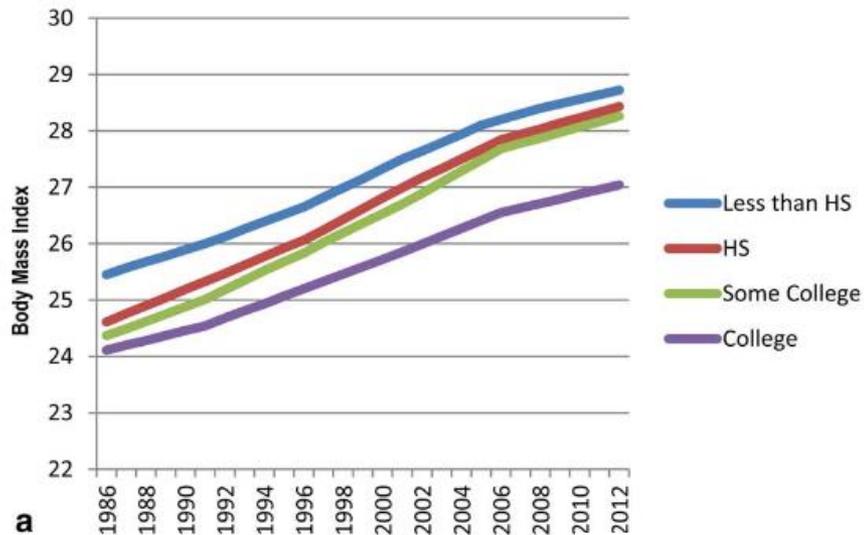
- ▶ 68% overweight or obese
  - ▶ 34% BMI 30 +, 34% BMI 25-29
- ▶ 1/3 of all overwt people don't get diabetes
- ▶ We burn 100 cals less a day at work
- ▶ Overall, food costs ~ 10-15% of income
- ▶ Calorie Intake is on the rise
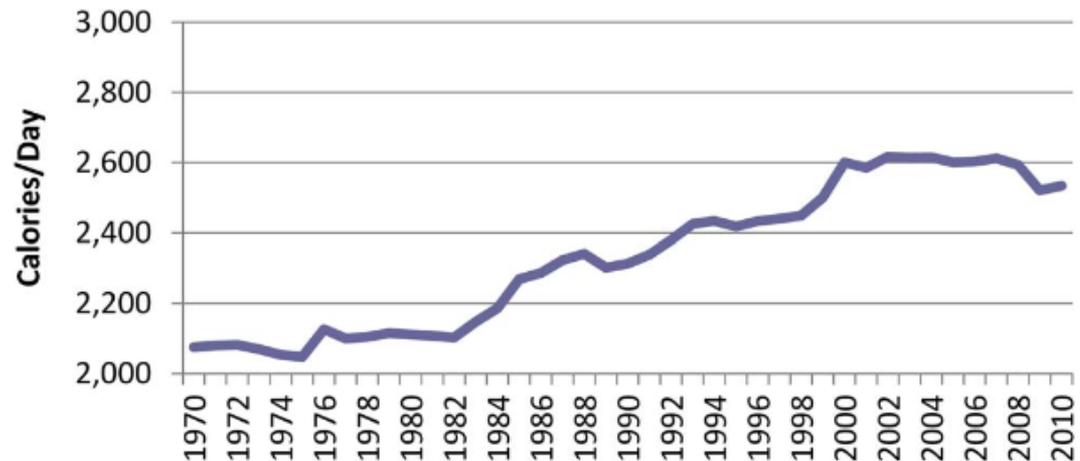
Average Daily Per Capita Calories Adjusted for Waste. Source: Economic Research Service of the United States Department bility (Per Capita) Data System.

Diabetes Education SERVICES

BMI Chart with Ranges

Body Mass Index Table

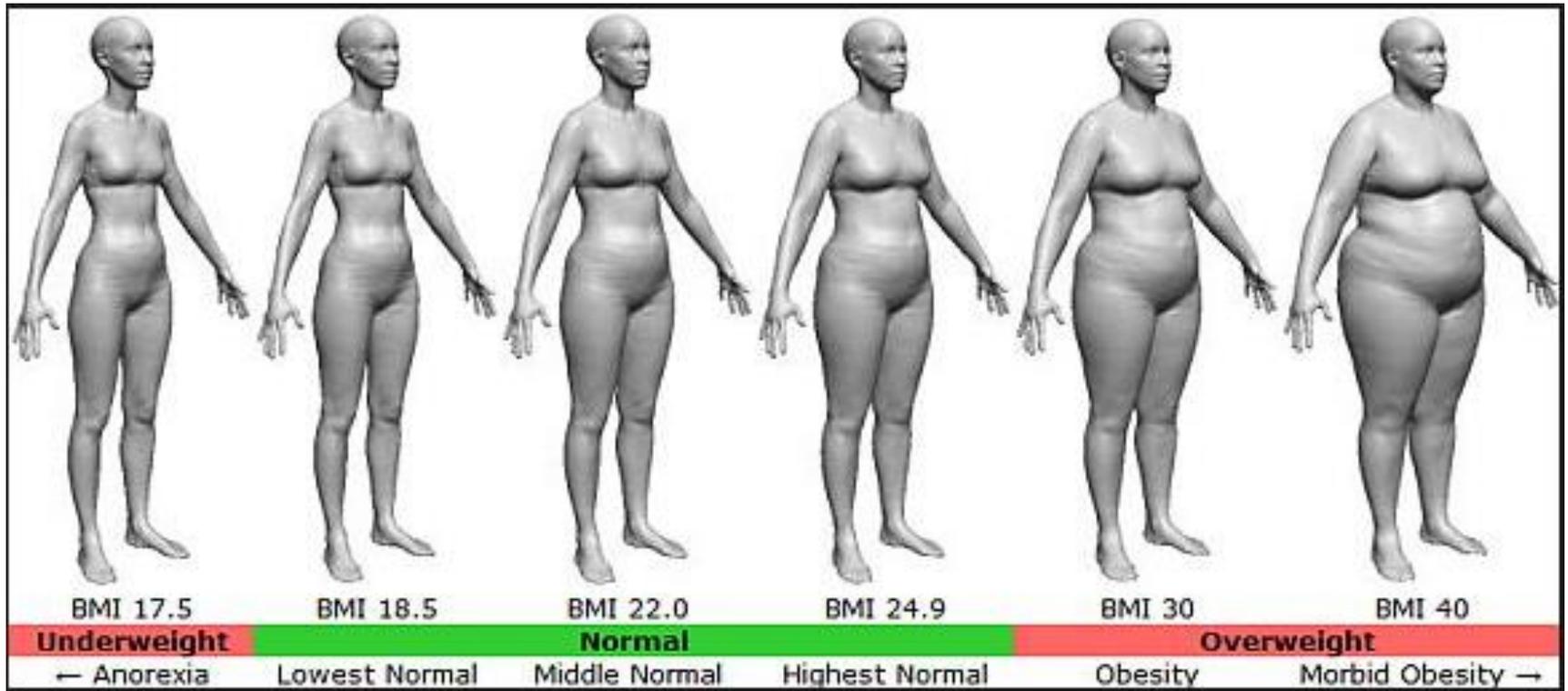		Normal						Overweight					Obese									Extreme Obesity														
BMI	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54
Height (inches)														**Body Weight (pounds)**																							
58	91	96	100	105	110	115	119	124	129	134	138	143	148	153	158	162	167	172	177	181	186	191	196	201	205	210	215	220	224	229	234	239	244	248	253	258
59	94	99	104	109	114	119	124	128	133	138	143	148	153	158	163	168	173	178	183	188	193	198	203	208	212	217	222	227	232	237	242	247	252	257	262	267
60	97	102	107	112	118	123	128	133	138	143	148	153	158	163	168	174	179	184	189	194	199	204	209	215	220	225	230	235	240	245	250	255	261	266	271	276
61	100	106	111	116	122	127	132	137	143	148	153	158	164	169	174	180	185	190	195	201	206	211	217	222	227	232	238	243	248	254	259	264	269	275	280	285
62	104	109	115	120	126	131	136	142	147	153	158	164	169	175	180	186	191	196	202	207	213	218	224	229	235	240	246	251	256	262	267	273	278	284	289	295
63	107	113	118	124	130	135	141	146	152	158	163	169	175	180	186	191	197	203	208	214	220	225	231	237	242	248	254	259	265	270	278	282	287	293	299	304
64	110	116	122	128	134	140	145	151	157	163	169	174	180	186	192	197	204	209	215	221	227	232	238	244	250	256	262	267	273	279	285	291	296	302	308	314
65	114	120	126	132	138	144	150	156	162	168	174	180	186	192	198	204	210	216	222	228	234	240	246	252	258	264	270	276	282	288	294	300	306	312	318	324
66	118	124	130	136	142	148	155	161	167	173	179	186	192	198	204	210	216	223	229	235	241	247	253	260	266	272	278	284	291	297	303	309	315	322	328	334
67	121	127	134	140	146	153	159	166	172	178	185	191	198	204	211	217	223	230	236	242	249	255	261	268	274	280	287	293	299	306	312	319	325	331	338	344
68	125	131	138	144	151	158	164	171	177	184	190	197	203	210	216	223	230	236	243	249	256	262	269	276	282	289	295	302	308	315	322	328	335	341	348	354
69	128	135	142	149	155	162	169	176	182	189	196	203	209	216	223	230	236	243	250	257	263	270	277	284	291	297	304	311	318	324	331	338	345	351	358	365
70	132	139	146	153	160	167	174	181	188	195	202	209	216	222	229	236	243	250	257	264	271	278	285	292	299	306	313	320	327	334	341	348	355	362	369	376
71	136	143	150	157	165	172	179	186	193	200	208	215	222	229	236	243	250	257	265	272	279	286	293	301	308	315	322	329	338	343	351	358	365	372	379	386
72	140	147	154	162	169	177	184	191	199	206	213	221	228	235	242	250	258	265	272	279	287	294	302	309	316	324	331	338	346	353	361	368	375	383	390	397
73	144	151	159	166	174	182	189	197	204	212	219	227	235	242	250	257	265	272	280	288	295	302	310	318	325	333	340	348	355	363	371	378	386	393	401	408
74	148	155	163	171	179	186	194	202	210	218	225	233	241	249	256	264	272	280	287	295	303	311	319	326	334	342	350	358	365	373	381	389	396	404	412	420
75	152	160	168	176	184	192	200	208	216	224	232	240	248	256	264	272	279	287	295	303	311	319	327	335	343	351	359	367	375	383	391	399	407	415	423	431
76	156	164	172	180	189	197	205	213	221	230	238	246	254	263	271	279	287	295	304	312	320	328	336	344	353	361	369	377	385	394	402	410	418	426	435	443

Source: Adapted from *Clinical Guidelines on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults: The Evidence Report.*

Diabetes Education SERVICES

BMI – Visual Image

| BMI 17.5	BMI 18.5	BMI 22.0	BMI 24.9	BMI 30	BMI 40
Underweight	**Normal**			**Overweight**	
← Anorexia	Lowest Normal	Middle Normal	Highest Normal	Obesity	Morbid Obesity →

Poll Question 1

▶ For overwt patient with new type 2 diabetes, what would be appropriate nutrition goals? (multiple)

    A. Avoid all desserts and processed foods

    B. Try to lose 5-10% of current body weight

    C. Eat less than 7% saturated fat

    D. Eat breakfast

    E. Avoid sugary beverages

Assess Knowledge, Self Management Skills
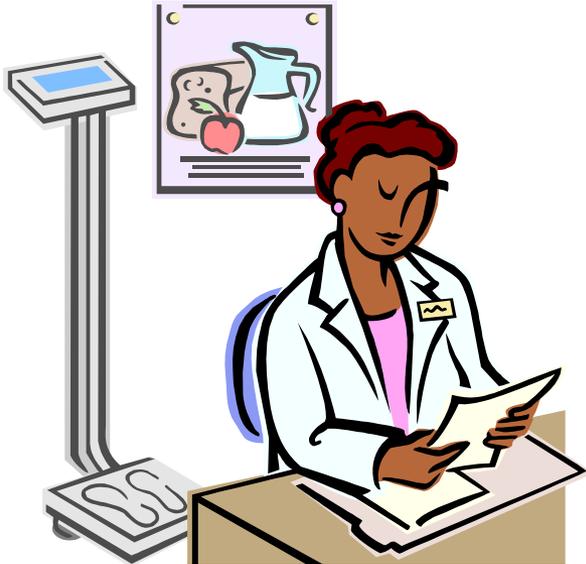
▸ Eating Patterns
  ▸ Preferences, portion sizes, timing on meals and snacks, eating environment, disordered eating

Diabetes Education
SERVICES

Medical Nutrition Therapy – ADA 2015

- No ideal percentage of calories from protein, carbohydrate and fat for people with diabetes.
- Macronutrient distribution should be based on an *individualized assessment* of eating patterns, preferences and metabolic goals.

▸ Emphasize eating a variety of nutrient dense foods in appropriate portions to:

  ▸ Attain individualized B/P, BG and lipid goals

  ▸ Attain and maintain body wt goals

  ▸ Delay and/or prevent complications

▸ Address individual nutrition needs based on

  ▸ personal and cultural preferences, access to food, willingness and barriers

▸ Maintain pleasure of eating by providing positive messages about food

  ▸ Limit food choices only when backed by science

▸ Provide practical tools for day-to-day planning rather than focusing on individual macronutrients.

Medical Nutrition Therapy – What Medicare Covers

- ▸ 3 hours initial benefit in first calendar year
- ▸ 2 hours follow-up annually
- ▸ Must be ADA/AADE Recognized
- ▸ MNT for diabetes and renal

Approach Depends on Patient

- New Type 2
  - Portion Control
  - Plate Method
  - Record Keeping
  - Education

- On Insulin?
  - Intensive insulin therapy with carb counting should be offered
  - Simpler approach may be required for some patients

Diabetes Education
SERVICES

Sodium, Fat and Fiber

▸ Sodium – Try and keep less than 2,300 mg a day

▸ Vitamin and mineral supplements not recommended -lack of evidence.

▸ Fat - same as recommended for general population

  ▸ Less than 10% saturated fat,

  ▸ Limit trans fats

  ▸ Less than 300 mg cholesterol daily

  ▸ Mediterranean Diet looks like good option

▸ Fiber 25 -38 gms a day

Choose Healthy, High Fiber Carbs

o Carbs have fiber, vitamins, minerals and phytonutrients

o 25 gms of fiber a day

o Power Carbs include:

   o Beans

   o Veggies

   o Fruits

   o Whole grain foods

Average American Consumes 22 teaspoons of sugar a day

- Warning label on sodas proposed

- One soda has 12 teaspoons sugar

- On avg, 1 person consumes 40 gallons of soda each year

- ADA guidelines "limit sodas and beverages with sugar, High Fructose Corn Syrup, (HFCS)

WHO limits on Sodas

▸ According to Harvard researchers, drinking 1-2 sugary beverages per day increases a person's risk of developing Type 2 by 26%.

▸ Mexico's soda tax took effect Jan. 1 2014, and sales of sugar-sweetened drinks fell 10% in the next 3 months and people drank more water and milk

▸ Drinking a 20 ounce soda a day was equivalent to an average of 4.6 years of telomere shortening UCSF 2014

▸ World Health Organization

  ▸ Reduce daily free sugar intake to 10% ~around 12tsps.

  ▸ Ideally < 5% of total energy intake for additional health benefits

▸ ADA - Sugary beverages associated with possibly visceral adiposity

Teaching About Eating Healthy

Major food groups

"Handy Diet"

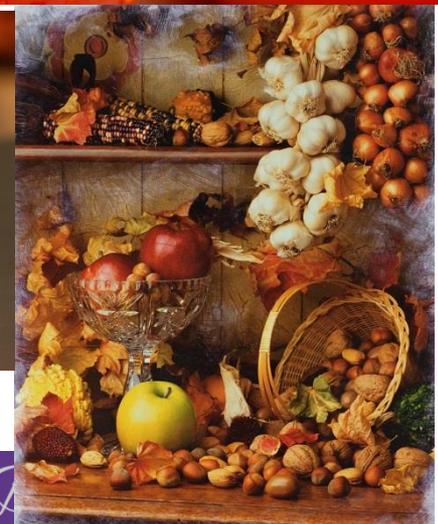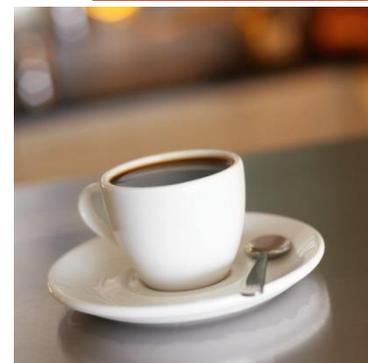Plate Method

Exchange Lists

Food Diaries / Glucose Records

Carbohydrate Counting

Assess what is best for the situation.

Move toward the Tomato

Losing 2-8kg Early in diagnosis Type 2 Helpful
ADA 2014

▶ Weight Loss –

  ▶ *The optimal macronutrient intake to lose weight not known*

  ▶ *The literature does not support one particular nutrition therapy to reduce weight, but rather a spectrum of eating patterns that result in reduced energy intake.*

▶ To lose one pound – avoid 3,500 cals

  ▶ Decrease intake 250-500 cals daily + exercise

Successful weight loss strategies include

▸ Weekly self-weighing

▸ Eat breakfast

▸ Reduce fast food intake.

▸ Decrease portion size

▸ Increase physical activity

▸ Use meal replacements

▸ Eat healthy foods

Bariatric Surgery

▸ Consider for adults with BMI 35 or greater

▸ Increases gut hormone availability

▸ Need life long support and monitoring

▸ More likely to cause remission* with recently diagnosed diabetes (more beta cell mass)

  ▸ 68% remission within 5 years

  ▸ 35% redeveloped diabetes

▸ Long term benefits still under investigation

*remission = BG levels normal without meds

USDA www.myplate.gov

Balancing Calories

▸ Enjoy your food, but eat less.

▸ Avoid oversized portions.

Foods to Increase

▸ Make half your plate fruits and vegetables.

▸ Make at least half your grains whole grains.

▸ Switch to fat-free or low-fat (1%) milk.

Foods to Reduce

▸ Compare sodium in foods like soup, bread, and frozen meals — and choose the foods with lower numbers.

• Drink water instead of sugary drinks.

Another plate example

Mi planificador de plato

Una comida saludable sabe buenísima

1/4 de almidón

1/2 de vegetales

1/4 de proteínas

El Método del Plato es una manera simple de planificar las comidas para usted y su familia. No necesita contar nada ni leer largas listas de alimentos. Todo lo que necesita es un plato de 9 pulgadas.

Michael R. Bloomberg, Alcalde
Thomas R. Frieden, M.D., M.P.H., Comisionado
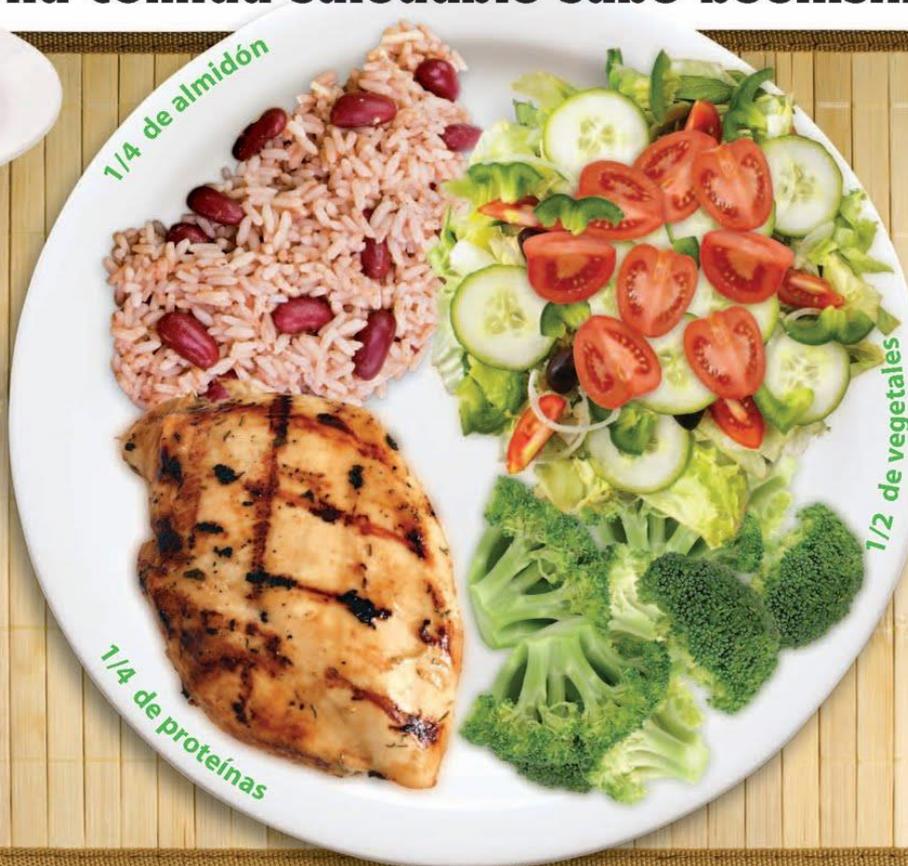
1/4 de proteína. 1/4 de almidón. 1/2 de vegetales.   Plato de 9 pulgadas

CUÍDATE NUEVA YORK

Diabetes Education SERVICES

How nutrients affect blood sugar

Carbs affect Post meal Blood Glucose

o Starch

o Fruit

o Milk
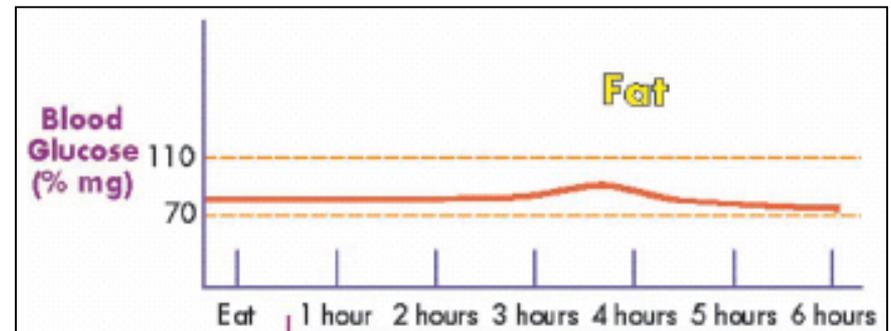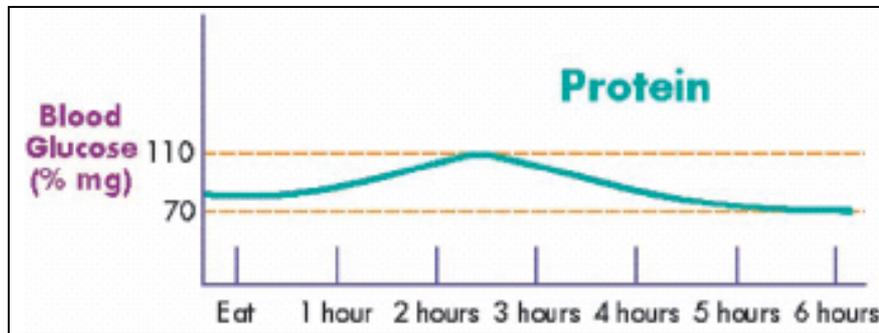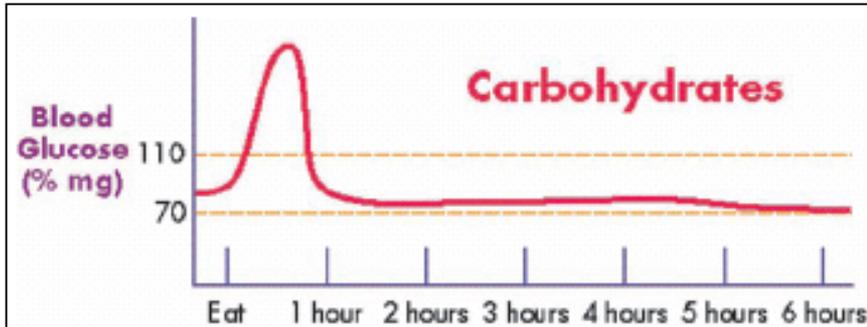
o Desserts

Starchy foods

*ADAM.

Poll Question 2

▸ Which of the following servings equals ~ 15 gms of carbohydrate? (multiple)

   A. Small bagel

   B. 1 ¼ cup strawberries

   C. Cup of milk

   D. ½ cup of rice

   E. ½ cup of jello

Carbohydrate Needs for Most Adults

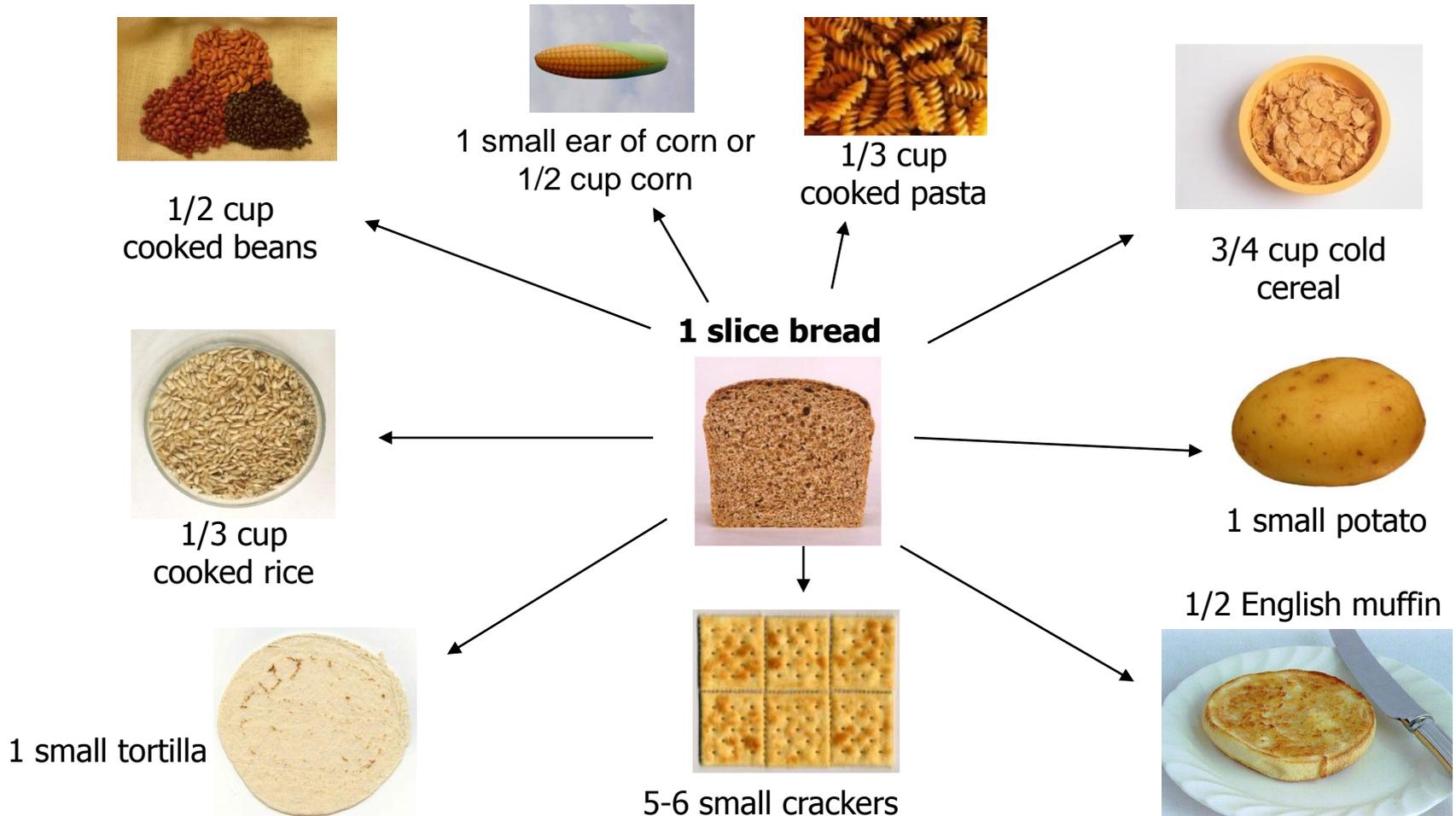|	Grams	Servings
Each Meal	45-60 gm	3 - 4
Snacks	15-30 gm	1- 2

Carbs affect Post Meal Blood Glucose

RDA – at least 130 gms of Carb a day

Carb Counting - Starch

Each Food has:
80 Calories
15 grams carb

1/2 cup cooked beans

1 small ear of corn or 1/2 cup corn

1/3 cup cooked pasta

3/4 cup cold cereal

1 slice bread

1/3 cup cooked rice

1 small potato

1/2 English muffin

1 small tortilla

5-6 small crackers

Carb counting- fruit

1 small fresh fruit

½ cup fruit juice

½ banana

½ cup unsweetened apple sauce

17 small grapes

1 slice bread

1 cup melon

¼ cup dried fruit

2 tbsp raisins

SUN·MAID

1 1/4 cup strawberries

Diabetes Education
SERVICES
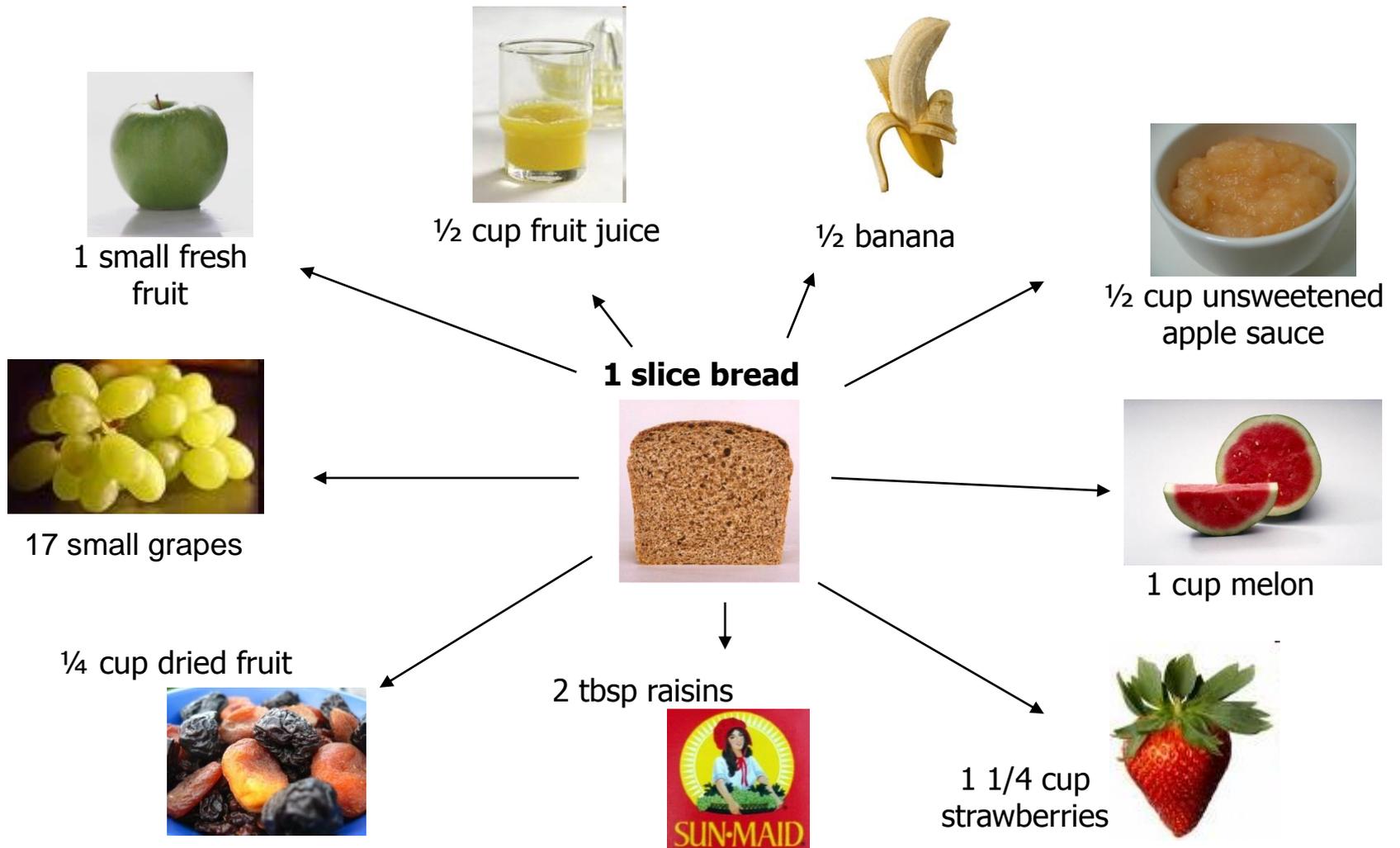
Carb Counting - Milk

Each Food has:
90-150 calories
12-15 grams carb

1 packet diet hot cocoa

8 oz buttermilk

1 slice bread

6 oz plain yogurt

8 oz milk

8 oz soy milk

6 oz light fruit yogurt
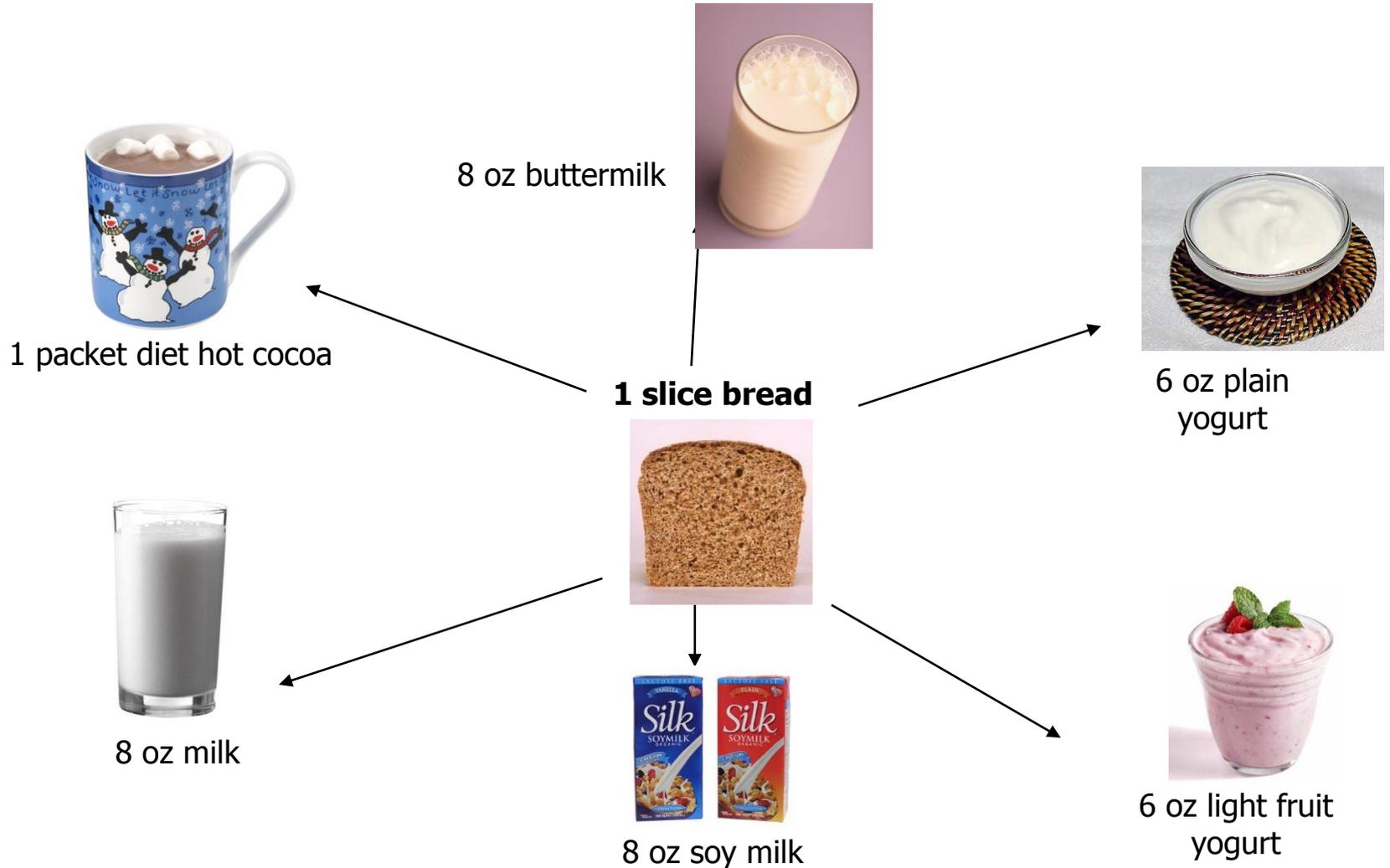
Carb Counting - Sweets

Each Food has:
Calories vary
15 grams carb

2 inch square cake or brownie, unfrosted

½ cup diet pudding

½ cup regular jello

2 tbsp light syrup

1 slice bread

2 small cookies

½ cup ice cream or frozen yogurt

½ cup sherbet

1 tbsp syrup, jam, jelly, table sugar, honey

¼ cup sorbet

Diabetes Education SERVICES
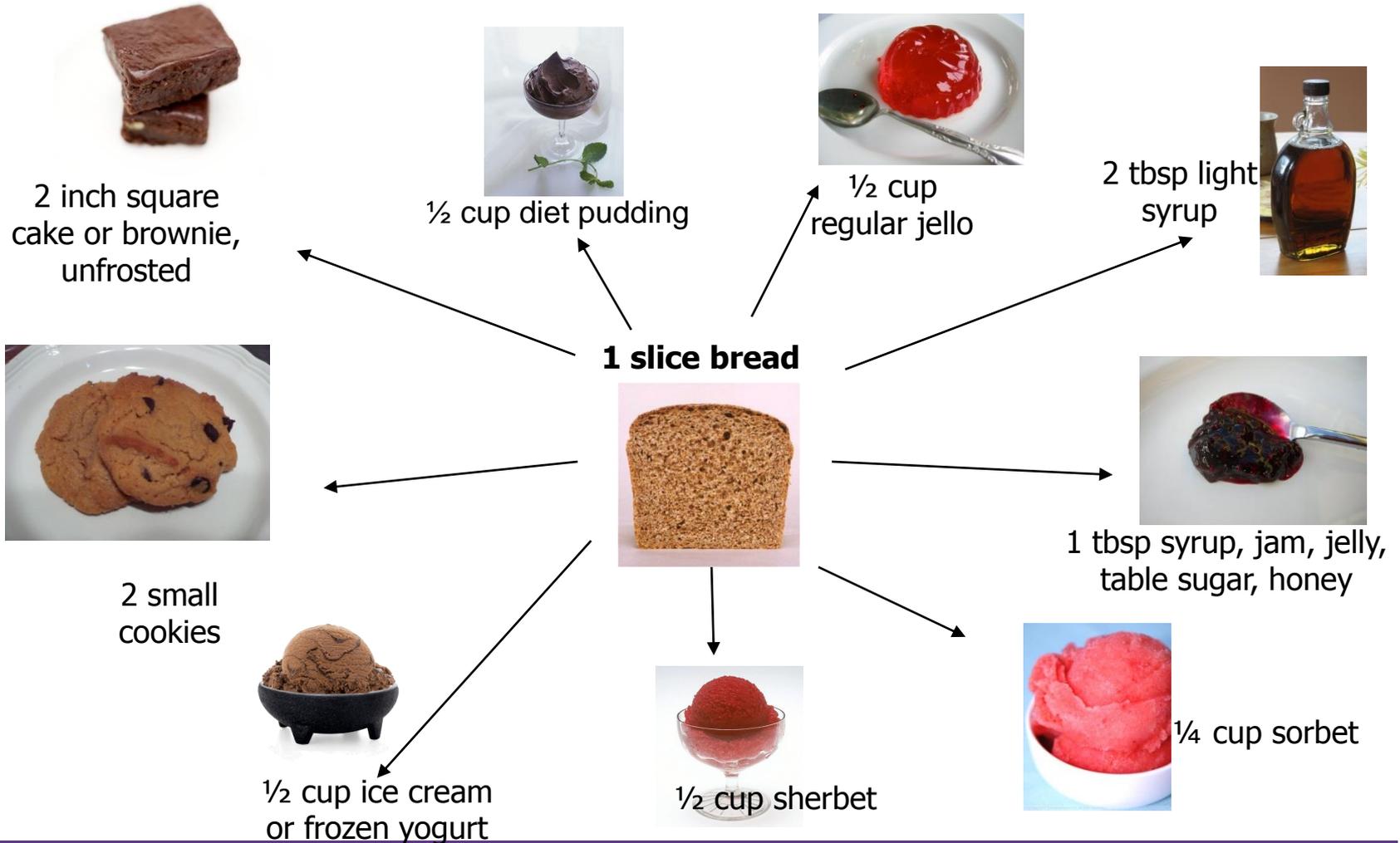
10 Superfoods

- Beans
- Dark Green Leafy Vegs
- Citrus Fruit
- Sweet Potatoes
- Berries

- Tomatoes
- Fish High in Omega-3 Fatty Acids
- Whole Grains
- Nuts
- Fat-Free Milk and Yogurt

Nutrition Facts

Serving Size 1/2 cup (114 g)
Servings Per Container 4

Amount Per Serving

Calories 90	Calories from Fat 30

	% Daily Value*

Total Fat 3g	5%
Saturated Fat 0g	0%
Cholesterol 0g	0%
Sodium 300mg	13%
Total Carbohydrate 13g	4%
Dietary Fiber 3g	12%
Sugars 3g	
Protein 3g	

Vitamin A 80%	*	**Vitamin C**	60%
Calcium 4%	*	**Iron**	4%

* Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:

	Calories	2000	2500
Total Fat	Less than	65g	80g
Sat Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2400mg	2400mg
Total Carbohydrate		300g	375g
Fiber		25g	30g

1 tsp sugar
=4 gms

Fooducate App – gives grade and nutrition info.

Fooducate
eat a bit better™

Calories per gram: Fat 9   Carbohydrates 4   Protein 4

Diabetes Education SERVICES

Dietary Fat and Cholesterol Guidelines

- Avg Calorie distribution for PWD
  - 45% of calories from carbs
  - 30-40% from fat,
  - 16-18% from protein
- Guidelines from ADA
  - Saturated fats <10% of calories
  - Limit trans fat as much as possible
  - Limit total dietary cholesterol to 300 mg/day
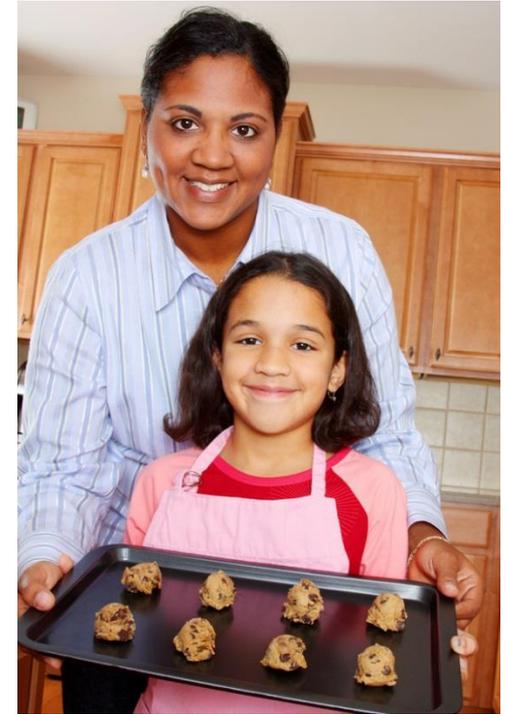
Fats- 9 calories per gram

▶ Monounsaturated - healthy
- o Olive & canola oils, Nuts, Avocado
- o Lowers total cholesterol and LDL
- o Raise HDL, high in omega 3 fatty acids

▶ Polyunsaturated - healthy
- o corn, walnut, safflower, soybean
- o Lowers total cholesterol and LDL

▶ **Saturated fats** (limit <10%)
- o Animal products – meat, chicken, pork, fish, skin, cheese butter, dairy
- o Plant products include; palm, coconut, palm kernel oil
- o Solid at room temp

Serving sizes
- o 1 tsp butter, margarine, oil, mayonnaise
- o 1 Tbsp salad dressing, cream cheese, seeds
- o 2 Tbsp avocado, cream, sour cream
- o 1 slice bacon

Unhealthy Dietary Fats

▸ Trans Fat – strong link between diet high in trans fat and heart disease – law to eliminate by 2016

  ▸ Lowers HDL

  ▸ Increases LDL

  ▸ May increase wt gain and abdominal fat

  ▸ May contribute to type 2 diabetes

▸ Look on label and look for words "hydrogenated" or "partially hydrogenated".
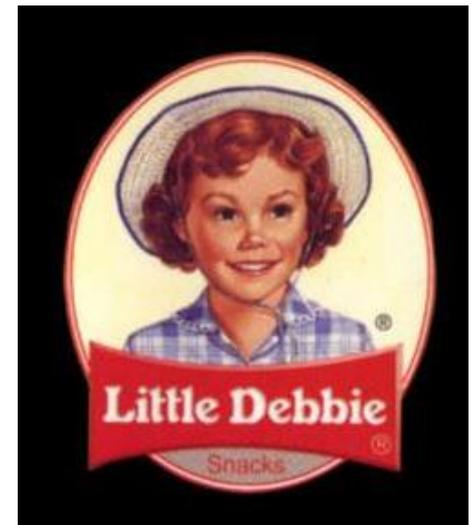
Saturated Fatty Acids – Not all equal

▶ The odds of incident type 2 diabetes is lower in people who have high plasma levels of odd-chain saturated fatty acids that come primarily from dairy fats

▶ In contrast, even-chain saturated fatty acids, such as those that come from consuming alcohol, soft drinks, or margarine, were associated with a greater likelihood of diabetes in the study, published online August 6 in *Lancet Diabetes & Endocrinology*. These fatty acids include palmitic acid, the most common saturated fatty acid in the US diet.

▶ "These results add to growing evidence that dairy fat might reduce insulin resistance and type 2 diabetes; benefits that might be greatest for cheese and yogurt,"

▶ Dr. Mozzafarian -

Diabetes Prevention Program
Focus on fat = wt loss success

To help you lose weight and improve your health, stay as close as possible to your fat and calorie goals.

Find your starting weight below. Your fat and calorie goals are in the same row. Circle your fat and calorie goals.

Weight (lb)	Fat Goal (grams)	Calorie Goal
120-174	33	1,200
175-219	42	1,500
220-249	50	1,800
>250	55	2,000

http://www.cdc.gov/diabetes/prevention/recognition/curriculum.htm

Diabetes Education
S E R V I C E S

Protein Recommendations -2015

▶ Diabetes and no diabetes kidney disease, evidence is inconclusive for ideal amount of protein, goals should be individualized.

▶ Diabetes and kidney failure, reducing the amount of dietary protein is **not** recommended. Does not improve outcomes.

▶ RDA – 0.8gm good quality protein/kg/day

  ▶ Protein seems to stimulate insulin response, do not use to treat hypoglycemia

Protein – 4 cals per gram
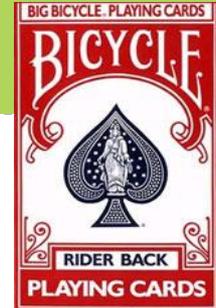
o Choose lean protein
  o Poultry, fish, egg, lean beef
  o Plant sources- beans, lentils, nuts
  o Low fat cheese- cottage cheese, mozzarella cheese

o Limit high fat protein
  o Bacon & sausage
  o High fat cuts of beef
  o Whole milk cheese

o Serving size
  o 1 oz = ¼ cup
  o 3 oz = deck of cards

Poll Question 3

▸ Which of the following is true about alcohol and diabetes? (multiple)

    a. White wine increases blood sugars

    B. Men can have 2 drinks and women can have one drink a day

    C. Alcohol increases risk of hypoglycemia

    D. "If you are going to drink, eat a starchy food"

    E. A shot of tequila is better than a margarita.

Using Alcohol Safely

▸ Women- 1 or fewer alcoholic drinks a day

▸ Men 2 or fewer alcoholic drinks a day

  ▸ 1 alcoholic drink equals

    ▸ 12 oz beer, 5 oz glass of wine, or 1.5 oz distilled spirits (vodka, gin etc)

▸ If drink, limit amount and drink w/ food.

▸ Can cause hypo and worsen neuropathy

Ms. Gonzales' Daily Meal plan

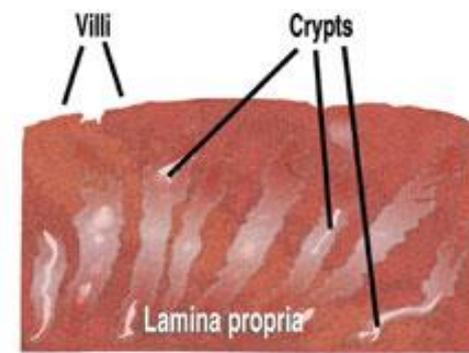| Break	Lunch	Dinner	Night
5 corn tortillas, 1/2 c. beans, salsa, peppers, egg beaters	Sandwich, low fat potato chips, 1c. juice, 2-4 lowfat cookies	Lg bowl low salt soup, 1c. rice, BBQ meat, salad & cooked vegs 1 glass wine	1 bowl of cereal
Avg BG 120's	**Avg BG 200's**	**Avg BG 200's**	**Avg BG 180's**

Poll Question 4

▶ If someone with type 1 is underweight, what are some possible causes? (multiple)

  A. Eating too much junk food

  B. Celiac disease

  C. A sit down job

  D. DiaBulimia

  E. Gastroparesis.

Celiac Disease
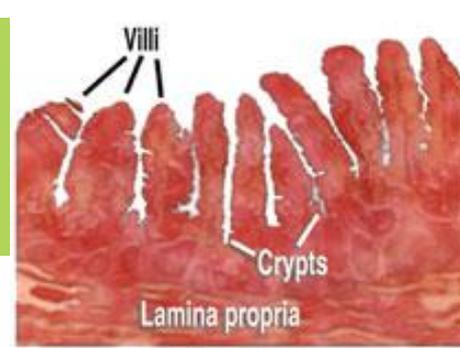
a. Healthy intestine   b. Diseased intestine

▸ Type 1 – Affects ~10 \%

▸ Immune reaction to gluten - affects function of villi in intestine, decreasing nutrient absorption

▸ S/S: bloating, malabsorption, wt loss, fatty stools, diarrhea, muscle tenderness, failure to thrive

▸ Diagnosis: measure either anti-endomysial antibodies (EMA) titers or tissue transglutaminase.

▸ If positive, refer to GI specialist for endoscopy and biopsy of small intestine to confirm diagnosis.

Treatment – Gluten Free for Life

- Avoid
  - Wheat (einkorn, durum, faro, graham, kamut, semolina, spelt),
  - Rye
  - Barley
- Refer to a dietitian

ASSOCIATED AUTOIMMUNE DISORDERS

- Insulin-dependent Type 1 Diabetes Mellitus, Liver diseases, Thyroid Disease-Hashimoto's Thyroiditis, Lupus (SLE), Addison's Disease, Chronic Active Hepatitis, Rheumatoid Arthritis

Ex of Gluten Containing Foods

- Brown rice syrup
- Breading & coating mixes
- Croutons
- Energy Bars
- Flour or cereal products
- Imitation bacon
- Imitation seafood
- Marinades

- Pastas
- Processed luncheon meats
- Sauces, gravies
- Self-basting poultry
- Soy sauce or soy sauce solids
- Soup bases
- Stuffings, dressing
- Thickeners (Roux)
- Communion wafers

And more!

Poll question 5

▸ John has gastroparesis. What is the best recommendation?

a. Eat raw vegetables and limit fruit

b. Eat low fiber, small meals

c. Always take insulin after meals

d. Avoid foods containing wheat

Gastroparesis

- Gastroparesis: affects 20 – 30% of pt's w/ longstanding dm
- Delayed emptying of stomach contents due to nerve damage
- S/S include early satiety, fullness, postprandial hypo, vomiting
- Diagnosis: gastric emptying studies, post-prandial hypoglycemia
- Tx: improve BG, small, low fat & fiber meals meds: reglan, erythromycin

Disordered Eating

▸ "DiaBulimia"

▸ People with type 1 diabetes give themselves less insulin than needed to lose weight

▸ Tends to start in adolescence, more likely to occur in women than men.

▸ Signs: unexplainable spikes, A1c, weight loss, lack of marks from fingerpricks, lack of prescription refills for diabetes meds, records that don't match A1c.

▸ Treatment – Mental health specialist and team

Physical Activity – Key areas

▸ ADA and American College of Sports Medicine recommendations

▸ Benefits, barriers precautions

▸ Exercise and activity plan (aerobic, resistance training, etc)

▸ Adjustment and monitoring of food and/or meds

Poll Question 6

▸ Which of the following are accurate exercise recommendations for people with diabetes? (multiple)

a. Exercise must be done daily for 30 mins to be effective

b. Must get stress test before starting an exercise program

c. Try not to miss more than 2 consecutive days of exercise

d. Incorporate resistance training 2 days a week

E. Both a and b

Physical Activity - Kids

▸ Children should be encouraged to engage in at least 60 minutes of physical activity a day.

Physical Activity - ADA

▶ Adults with diabetes –

  ▶ 150 minutes a week of moderate-intensity aerobic physical activity

  ▶ spread over at least 3 days/wk

  ▶ Don't miss more than 2 consecutive days of exercise.

▶ In absence of contraindications, type 2 adults should engage in resistance training 2x's a wk

Definitions

▶ Physical activity

  ▶ Bodily movement produced by the contraction of skeletal muscle that requires more energy than when resting

▶ Exercise

  ▶ Subset of physical activity that is planned, structured and includes repetitive body movements

  ▶ Performed to improve or maintain physical fitness

▶ Sedentary behavior

  ▶ Little on no movement or physical activity

Progressive Resistance exercise

▸ Improves insulin sensitivity

▸ Goal is 2 sessions a week

▸ Examples include:

  ▸ Exercise with free weights, wt machines

▸ Each session consisting of least:

  ▸ One set of five or more resistance exercises using large muscle groups

Benefits of Exercise

▸ Improve BG

  ▸ Improves insulin sensitivity

▸ Reduce CV Risk factors

▸ Maintain wt loss

▸ Contribute to well being

▸ Muscle strength

▸ Slows decline in mobility

Importance of Exercise with Diabetes

▸ Vital component of prevention as well of the management of type 2 diabetes

▸ Greatest impact in improving metabolic abnormalities in type 2 when started early in progression from IR to Pre Diabetes to DM

▸ Type 1 – emphasis on adjusting insulin to allow for safe participation in all forms of activity.

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Pre-exercise Eval

- Use clinical judgment when making physical activity suggestions and check in with provider if unsure.
- Encourage high risk pts to start with low intensity and short time.
  - Increase duration and intensity slowly
- Contraindications to certain types of exercise:
  - Uncontrolled HTN, severe autonomic or peripheral neuropathy, history of foot lesions, unstable proliferative retinopathy.
  - Pt w/ complications require a more thorough assessment.

Patients to discuss symptoms with provider before starting exercise

▸ Chest pain and/or shortness of breath

▸ Leg cramps that go away with rest

▸ Head, shoulder, neck and or back aches.

▸ *Any unexplained pain above the belt line should be considered cardiac in origin until proven otherwise.*

Poll Question 7

▸ What are some exercise precautions for people with diabetes? (multiple)

a. Always have a snack if BG <100

b. Look for signs of hypo for up to 24 hrs after exercise

c. Carry a snack with you during exercise.

d. Let someone know your route

Duration of Hypoglycemia Risk

‣ During exercise

‣ Immediately after exercise

‣ Post exercise late onset hypo

  ‣ More often in type 1

  ‣ More often at night

  ‣ Moderate to high intensity exercise > 30 min

  ‣ 4 to 15 hours following an exercise session

Hypoglycemia Prevention Strategies

▸ If planned activity, adjust insulin in anticipation of activities

▸ Reduce insulin in post exercise period

▸ Frequent monitoring in post exercise period

▸ Pt to keep log to determine how responds to different activities, duration and intensity.

Hypoglycemia Prevention Strategies

▸ Carry fast acting carb/ glucagon ER Kit

▸ Extra CHO in post exercise period

▸ Caution with alcohol post exercise

▸ Adjust carbohydrate prior to planned activity:

  ▸ If BG < 100 prior to exercise

  ▸ If using insulin and /or secretagogues

    ▸ 15 gms carb snack

Hypoglycemia Prevention

CARBOHYDRATE REPLACEMENT DURING PHYSICAL ACTIVITY			
Intensity	Duration	Carbohydrate Replacement	Frequency
Mild to Moderate	<30 min	May not be needed	N/A
Moderate	30 to 60 minutes	15 grams	Each hour
High	>60 min	30 to 50 grams	Each hour

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Poll Question 8

▸ Which of the following is a SMART Goal?

a. I will lose 5% of my body weight

b. I will eat less sugary foods during the week.

c. I will monitor my blood sugars on a regular basis.

d. I will eat one less bag of chips every day for 1 week.

e. Not sure

Behavior Change and Smart Goals

▶ Julie currently walks her dog 3 times a week around the block.

▶ Is this exercise?
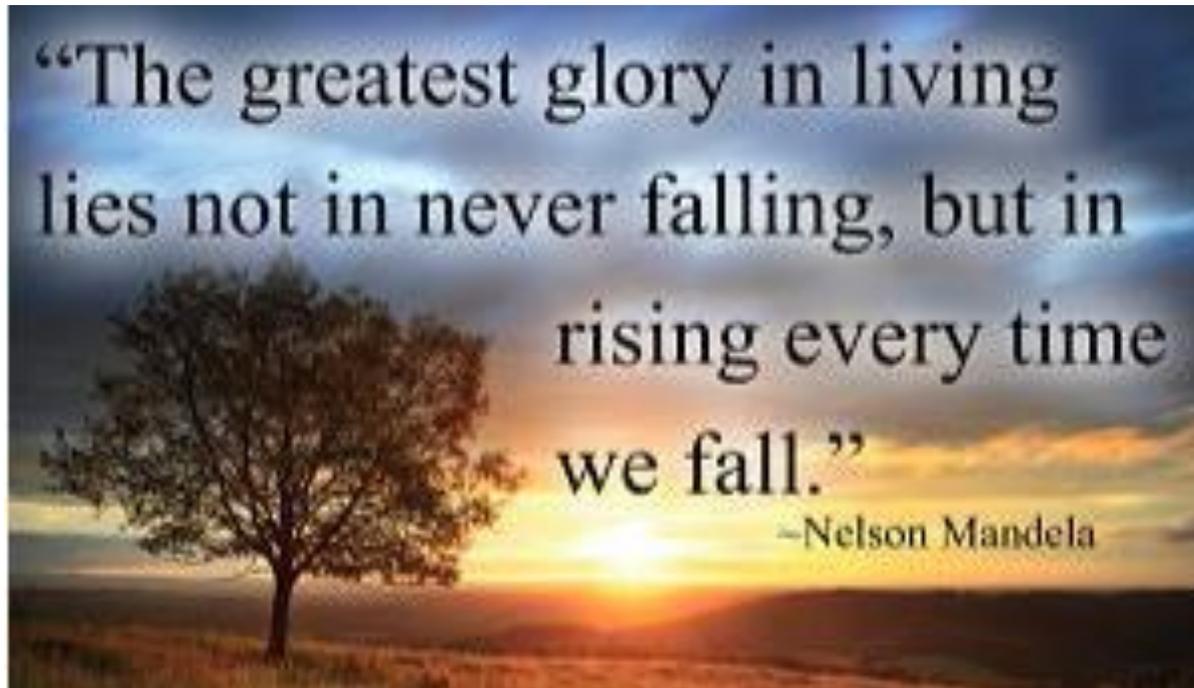
▶ What new and revised SMART Goal could you set with her?

Setting SMART Goals

- Specific

- Measurable

- Attainable

- Realistic

- Timely

- Behavioral Goal –
  - Walk the dog around the block 4 days a week.
  - Walk the dog around the block two times.
  - Do 10 minutes of weight bearing activity on 2 of the days you don't walk the dog.

Help Patients Prepare for Setbacks

"The greatest glory in living lies not in never falling, but in rising every time we fall."
—Nelson Mandela

Diabetes Education SERVICES

Thank You

- Questions?
- Email bev@diabetesed.net
- Web www.diabetesed.net