- Measures have been taken, by the Utah Department of Health, Bureau of Health Promotions, to ensure no conflict of interest in this activity.
- CNE/CEU's are available for this live webinar. You must take the pre and post tests. 80% is required on the post test to receive CNE/CEU's.
- Certificates will be emailed out to you within two weeks

Evidence-Based Nutrition Practice Guidelines and Nutrition Recommendations for Adults with Type 1 and Type 2 Diabetes

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Certified Endocrinology Coder

May 1, 2015

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Learning Objectives

1. Name the 3 primary clinical outcomes (goals) for diabetes MNT and the current target values.

2. Explain the latest nutrition intervention recommendations to normalize **HbA1c** in patients with type 1 and type 2 diabetes.

3. Explain the latest nutrition intervention recommendations to normalize **blood pressure** in patients with type 1 and type 2 diabetes.

4. Explain the latest nutrition intervention recommendations to normalize **blood lipids** in patients with type 1 and type 2 diabetes.

Main References and Symbols in Slides

- Academy of Nutrition and Dietetics Diabetes Nutrition Practice Guideline (NPG), 2008*

- Academy of Nutrition and Dietetic Evidence Analysis Library, Executive Summary, Disorders Lipid Metabolism, 2011*

- Standards of Medical Care in Diabetes, 2015*, Amer. Diab. Assoc.

- Nutrition Therapy Recommendations for the Management of Adults With Diabetes, Alison B. Evert, MS, RD, CDE, et al *Diabetes Care,* Nov. 2013* vol. 36 no. 11 3821-3842

**Date of last update when accessed online on May 1, 2015*

Recommendations: Medical Nutrition Therapy (MNT)

- Individuals who have prediabetes or diabetes should receive individualized MNT as needed to achieve treatment goals, preferably provided by a registered dietitian familiar with the components of diabetes MNT (A)

- Because MNT can result in cost-savings and improved outcomes (B), MNT should be adequately covered by insurance and other payers (E)

Recommendations: Diabetes Self-Management Education, Support

- People with diabetes should receive DSME according to ***National Standards for Diabetes Self-Management Education and Support*** at diagnosis and as needed thereafter (B)

- Effective self-management, quality of life are key outcomes of DSME; should be measured, monitored as part of care (C)

- DSME should address psychosocial issues, since emotional well-being is associated with positive outcomes (C)

Objective 3: Change the System of Care

- Most successful practices have an institutional priority for providing high quality of care
  - Basing care on ***evidence-based*** guidelines
  - Expanding the role of teams and staff
  - Redesigning the processes of care
  - Implementing electronic health record tools
  - ***Activating and educating patients***
  - Identifying and/or developing community resources and public policy that supports healthy lifestyles
  - Alterations in reimbursement

What is an Evidence-Based Nutrition Practice Guideline?

- Series of guiding statements and treatment algorithms developed using systematic process for identifying, analyzing and synthesizing scientific evidence.

- Assist **practitioner's** and **patient's** decisions about appropriate nutrition care for specific disease states or conditions in typical settings.

NPGs and Nutrition Care Process (NCP)

- **Nutrition Care Process** is framework for NPG:
  - **Nutrition Assessment**
  - **Nutrition Diagnosis**
  - **Nutrition Interventions**
  - **Monitoring and Evaluation**
    - **Of outcomes**
      - **Knowledge, skill, behavior, clinical, cost-savings, quality of life, satisfaction (pecking order!)**

Rating System

Each **Recommendation** rated as:

- **Strong**
- **Fair**
- **Weak**
- **Consensus**
- **Insufficient Evidence**

Each **Recommendation Statement** is:

- **Conditional**
  - Applies to specific circumstances or sub-population (if - then scenario)
- **Imperative**
  - Applies to target population (required, must, should)

Target Population for Diabetes NPG

Adults with type 1 and type 2 diabetes:

- Adult (19 to 44 yrs)
- Middle Age (45 to 64 yrs)
- Aged (65 to 79 yrs)
- Male and female

MNT Spelled Backwards = TNM

Total Nutrition Makeover

Managing and

Maintaining a nutrition

Makeover

Means

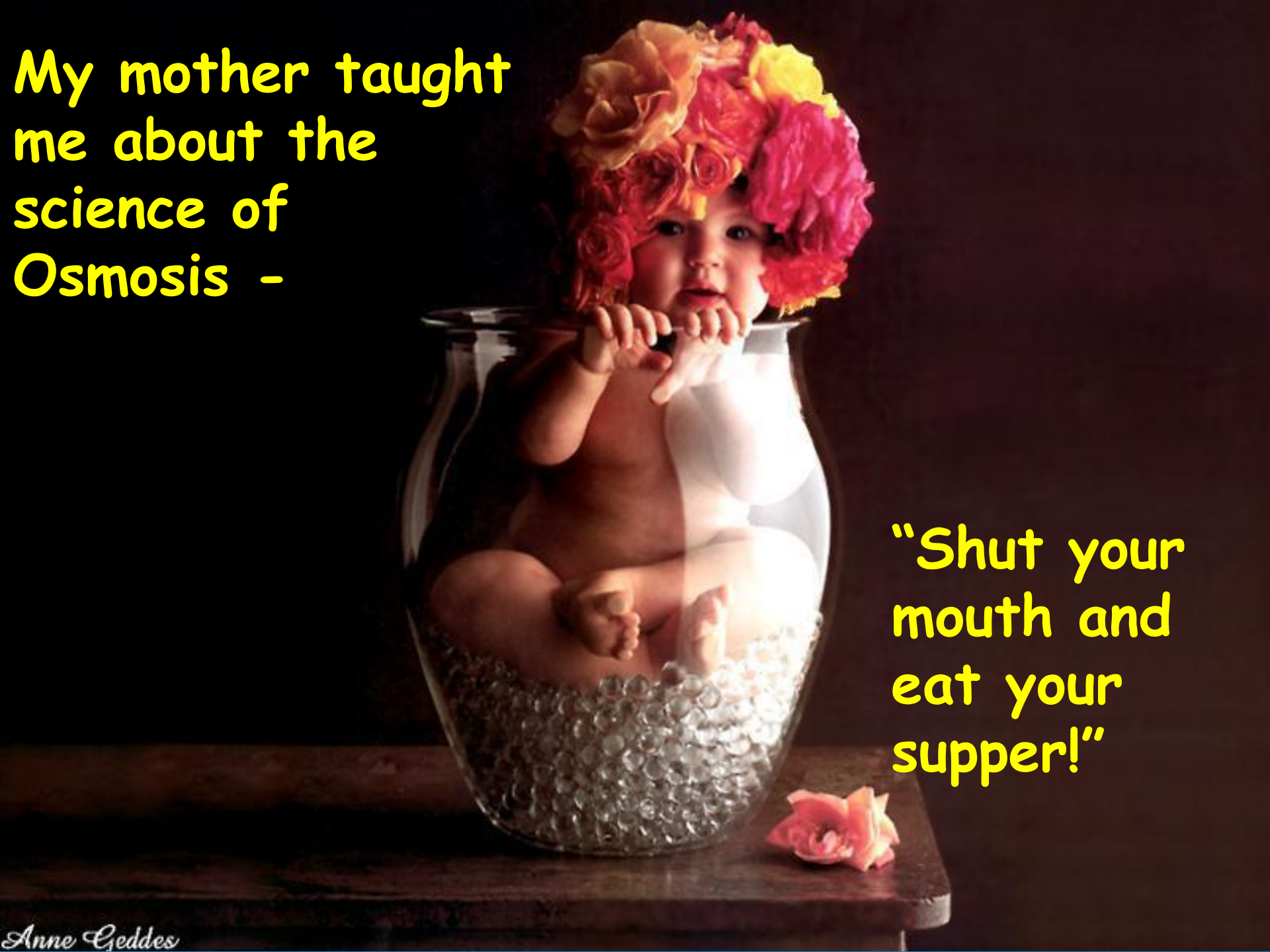
Modifying behaviors, which

Means

More than 1 visit over several

Months

My mother taught me about the science of Osmosis -



"Shut your mouth and eat your supper!"

MNT Goals for Adult Patients with Diabetes

GOALS	TARGET
A1c	<7%
Pre-Meal	80 – 130 mg/dL
Blood pressure	<140/90 mmHg
LDL -C	<100 mg/dL
Triglycerides	<150 mg/dL
HDL-C	>40 mg/dL for men, >50 mg/dL for women
Body weight	Achieve and maintain goals
Diabetes complications	Delay or prevent complications

Standards of Medical Care in Diabetes, *Diabetes Care* 2015

GOALS, Continued

- Address individual nutrition needs based on:
  - Personal and cultural preferences
  - Health literacy and numeracy
  - Access to healthful food choices
  - Willingness
  - Ability to make behavioral changes
  - Barriers to change
- Maintain pleasure of eating by:
  - Providing positive messages about food choices
  - Limiting food choices only per scientific evidence
- Provide practical tools for day-to-day meal planning rather focusing on individual:
  - Macronutrients (carb, protein, fat)
  - Micronutrients
  - Single foods

A1C ~ “Average Glucose”

A1C	eAG	
%	mg/dL	mmol/L
6	126	7.0
6.5	140	7.8
7	154	8.6
7.5	169	9.4
8	183	10.1
8.5	197	10.9
9	212	11.8
9.5	226	12.6

eAg = (28.7 x A1C) - 46.7

American Diabetes Association

Diagnosing Diabetes, 2015

	Normal	Pre-Diabetes	Diabetes
FPG	< 100 mg	100 – 125 mg Impaired Fasting Glucose	≥ 126 mg*
Random Plasma Glucose			≥ 200 mg w/ symptoms of high BG
2 hr OGTT (plasma) 75 g glucose in water	< 140 mg	140 – 199 mg Impaired Glucose Tolerance	≥ 200 mg*
A1C	< 5.7%	5.7% to 6.4%	≥ 6.5%*

*In absence of unequivocal hyperglycemia, test to be confirmed by repeat testing.

Standards of Medical Care in Diabetes, *Diabetes Care* 2015

Effectiveness of Diabetes MNT

Indicator	Expected Outcome	When to Evaluate
BG Control →		6 wks to 3 months
A1c	0.25 – 2.9% ↓	
Plasma FG	50 - 100 mg ↓	
Lipids →		6 wks; if goals not met, intensify MNT, check in 6 wks
Total Chol	24 - 32 mg (10 - 13%) ↓	
LDL	15 - 25 mg (12 - 16%) ↓	
TG	15 - 17 mg (8%) ↓	
HDL	No exercise:3 mg (7%) ↓ But with exercise: no ↓	
BP	5 mm ↓ in systolic 2 mm ↓ in diastolic	Measured at every visit

Diabetes NPG Addresses 6 Key Components for Control of "A-B-C's" of Diabetes:

A1C

Blood Pressure

Cholesterol

How? S.W.E.E.T.S. for L.I.F.E.

S.W.E.E.T.S. are Your Diabetes L.I.F.E.savers

S = Stress Control

W = Weight Control

E = Eat Healthy

E = Exercise

T = Take Diabetes Meds, If Required

S = Self-monitor blood glucose

for

L = Learn to Reduce Risks

I = Invest in Long-Term Support

F = Fix Your Problems

E = Enjoy Adequate Sleep

MNT wrapped around, and spelled backwards, is

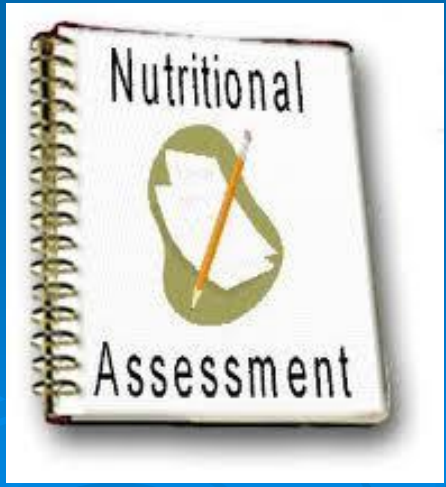
T N M ...

Total Nutrition Makeover

Nutrition Assessment:

1st Step in

Nutrition Care Process



Diabetes Nutrition Assessment Matrix

Food, Nutrition and Exercise History	Biochemical Data, Medical Tests, Procedures	Anthro-pometric Measure-ments	Physical Exam Findings	Client History
Food with focus on carb, nutrient intake, nutrition related knowledge, practices, physical activity, food availability	Lab data (electrolytes, BG, BP, lipids), tests (gastric emptying time, resting metabolic rate)	Ht, wt, BMI, growth rate, and rate of wt change	Oral health, physical appearance, muscle and subcutaneous fat, wasting, and mental status	Meds, use of supplements, medical and health history, social personal and family history

Assessment to Include Waist Circumference Measurement and Evaluation:

CVD Disease Risk Associated with BMI + Waist Size

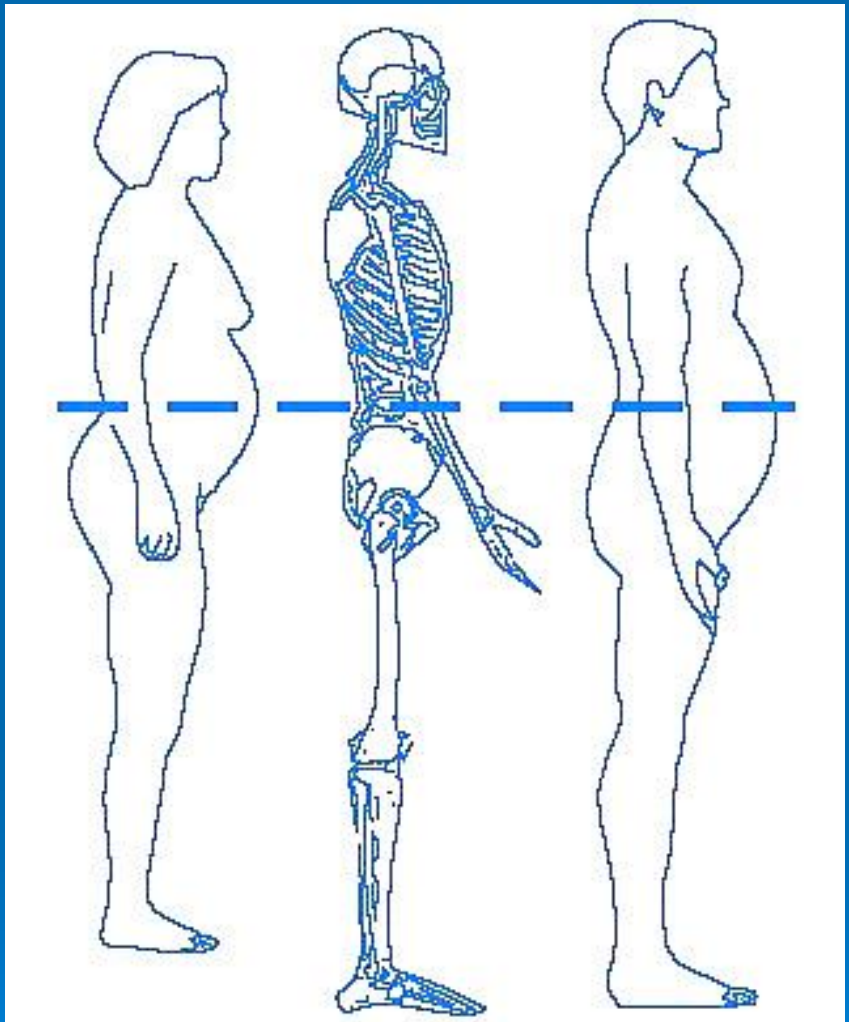
BMI		CVD Risk per Waist: Waist: ≥ 40” Men, ≥ 35” Women
≤18.5	Underwt	N/A
18.5 - 24.9	Normal	N/A
25.0 - 29.9	Overwt	High
30.0 - 34.9	Obese	Very High
35.0 - 39.9	Obese	Very High
≥40	Extremely Obese	Extremely High

http://www.consumer.gov/weightloss/bmi.htm

Obese Asian Americans cutpoints for prediabetes and type 2 diabetes:		
BMI		
≥23 kg/m2	**Overwt or obese**	

Standards of Medical Care in Diabetes, *Diabetes Care* 2015

How To Measure Waist Circumference



Measuring-Tape Position for Waist (Abdominal) Circumference in Adults

With arms straight down, measure at elbow joint.

Source:
Nutrition Care Manual, 2015
Academy of Nutrition and Dietetics

Also Include *Waist-to-Hip Ratio*

Waist and Waist to Hip Ratio Chart: Risk of CVD and Obesity-Related Diseases		
MALE	**FEMALE**	**Health Risk Based Solely on Waist and WHR**
Waist: >40"	Waist: >35"	**At Risk**
WHR: 0.95 or below	WHR: 0.80 or below	**Low Risk**
WHR: 0.96 to 1.0	WHR: 0.81 to 0.85	**Moderate Risk**
WHR: 1.0+	WHR: 0.85+	**High Risk**

Strong, Imperative

diabetes

Nutrition Diagnosis:

2nd Step in

Nutrition Care Process

Nutrition Intervention:

3rd Step in

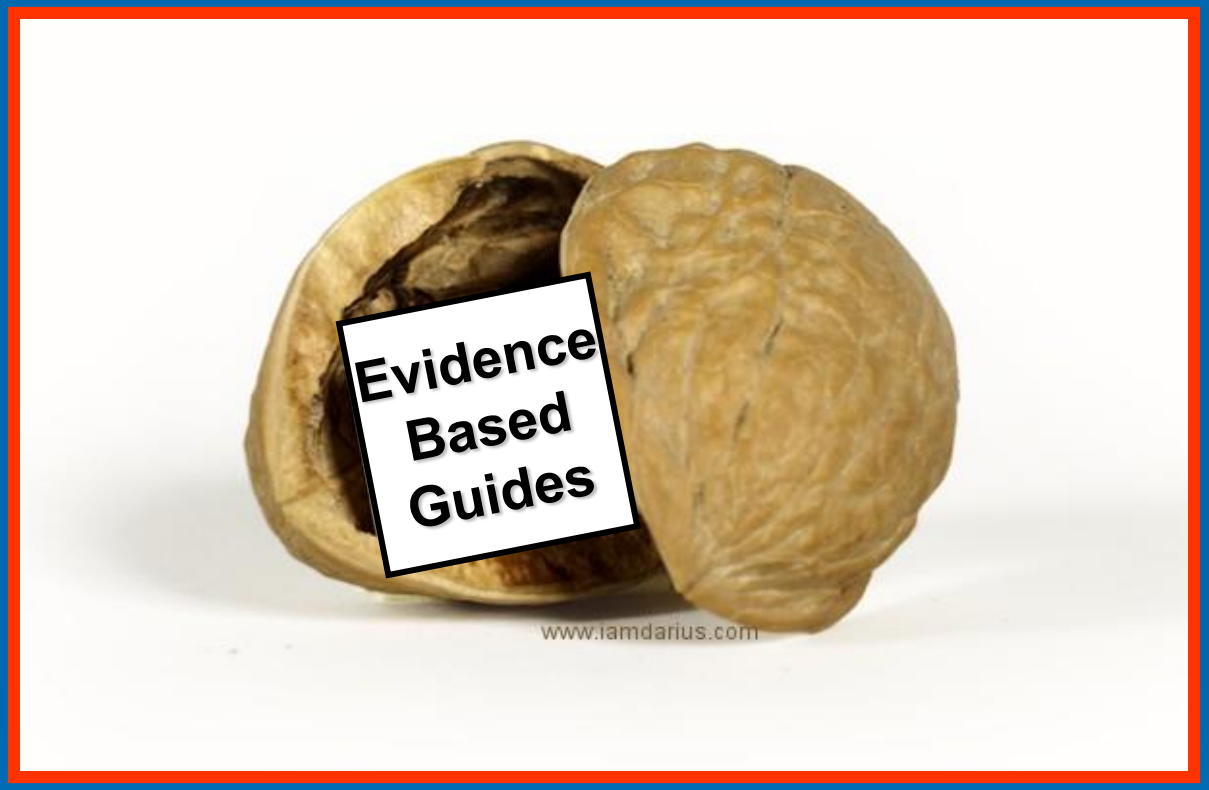
Nutrition Care Process

Evidence-Based Interventions to Improve BG, Lipids, BP and Reduce Cardiometabolic Risk (CMR) in Adult Patients with Type 1, Type 2 Diabetes are Summarized in:

A. D.I.A.B.E.T.E.S.

M.E.A.L. P.L.A.N.

Let's Examine in a Nutshell



Lots more details follow in slides <u>after</u> nutshell summary

A = **A**void sugar-sweetened beverages (BG, CMR)

D = **D**ivide daily calories into **≥3** moderate meals or **≥4** smaller meals (BG)

I = **I**ncrease plant stanols and sterols, **1.6 – 3 g/day** (Lipids)

I = **I**mprove portion control for BG control, weight loss and weight maintenance.

A = **A**rrange meal plan/eating pattern that fits pt's personal preferences, goals, etc.

Appreciate that there is:

- No "one-size-fits-all" eating pattern
- Many acceptable eating patterns exist:
  - Mediterranean-style, MUFA-rich eating pattern can improve BG, CVD risk
    - Can be recommended as effective alternative to *lower fat, higher-carb plan*

B = **B**oost total fiber and **viscous soluble** fiber to **7 - 13 g/day** (Lipids)

E = **E**nsure calorie intake ↓, if overwt.

Ensure intake of plant + marine omega 3 fats from foods (Lipids, CMR)

Encourage intake of n3 fish, **2 – 3x/week** (Lipids, CMR)

T = **T**rim sodium to **<2300 mg/day** (BP);
DASH Diet = 1500 – 2400 mg/day

- **Viscous soluble** dietary fiber

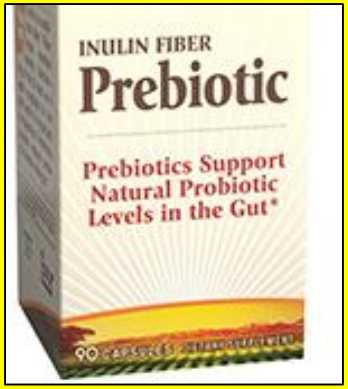
FOOD SOURCE	VISCOUS SOLUBLE FIBER(G)[1]	TOTAL DIETARY FIBER (G)
Fruit (1 medium)		
Apple	1	4
Banana	1	3
Blackberries (1/2 c)	1	4
Nectarine	1	2
Citrus fruit (orange, grapefruit)	1	2–3
Peach	1	2
Pears	2	4
Plums	1	1.5
Prunes	1.5	4

- **Viscous soluble** dietary fiber

FOOD SOURCE	VISCOUS SOLUBLE FIBER(G)[1]	TOTAL DIETARY FIBER (G)
Seeds		
Psyllium seeds, ground (1 tbsp)	5	6

➢ Inulin

- **Viscous soluble** dietary fiber…added to foods…in capsules



- Naturally occurring carb (oligosaccharide, in group of carbs called fructans) from chicory root
  - Does **not** break down into glucose like other carbs
  - Does **not** affect BG level (minimal glycemic effect)
- Passes into large intestine; prebiotic that feeds gut bacteria and fermented by, producing friendly acids*

- **Inulin**
  - **Benefits:**
    - **Viscous soluble** fiber:
      - ↓ blood cholesterol and LDL-C
      - ↓ post-meal BG
    - Prebiotic: may ↓ post-meal BG via acids that are produced when fermented by gut bacteria*
    - Excellent sugar replacer due to:
      - Sweet taste (30-50% as sweet as sucrose)
      - Bulking properties of real sugar

E = **E**nsure meal plan meets recommended daily allowance/dietary reference intake for all **micronutrients** (CMR)

S = **S**hrink saturated fat to **<5%** of calories/day and trans fats to **0 g/day** (BG, Lipids, CMR)

Due to ↓ research in area, PWD to follow *Dietary Guidelines for Americans*, 2010:

- ↓ saturated fat to 10% of calories
- ↓ dietary cholesterol to 300 mg/day
- Limit trans fat as much as possible

time for questions

S = **S**ubstitute low-glycemic load foods for higher-glycemic load foods (BG)

S = **S**hrink high sucrose foods to avoid displacing nutrient-rich foods (BG)

M = **M**ake alcohol intake moderate (**≤1** drink/day for women; **≤2** for men)

M = **M**ake at least half of all grains **whole grains**

E = **E**nsure intake of **antioxidant-rich** fruits, veggies, whole grains (not supplements) (CMR)

- Oxidation reactions produce free radicals which ⇨ oxidative stress (**esp. CV system**) ⇨ cell damage ⇨ pre-mature aging
- High BG ⇨ glucose toxicity ⇨ glucose oxidation ⇨ free radical production ⇨ cell damage, incl. pancreatic beta cell damage/destruction
- Dietary antioxidants that inhibit oxidation: vitamin A, C, E, beta carotene, lycopene, lutein, polyphenols, CoQ10, selenium, flavonoids, flavones, flavonols, proanthocyanidins, green tea

E = **E**ncourage high omega 3 (n3) **fatty fish** to 2 - 3 x/week + **plant-based** fatty acids

- **Supplementation** to be based on status of:
  - CHD
  - Angina
  - Implantable cardioverter defibrillator/ICD

Patients without documented CHD	Eat variety of (preferably fatty) fish at least twice a week. Include oils and foods rich in alpha-linolenic acid (flaxseed, canola and soybean oils; flaxseed and walnuts).
Patients with documented CHD	Consume about 1 g of EPA + DHA/day, preferably from fatty fish. EPA+DHA in capsule form could be considered in consultation with the physician.
Patients who need to ↓ triglycerides	2 - 4 g of EPA + DHA/day provided as capsules under physician's care.

A = **A**ssure consistent **timing** and **even spacing** of meals and carbohydrate intake

A = **A**ssure priority given to coordinating food with type of diabetes medicine

- If on insulin secretagogues, eat moderate amounts of carb at meals and snacks.

L = **L**earn to monitor **carbohydrate** intake: amount **individualized** to meet BG targets.

- Carb foods, high carb beverages and endogenous insulin production are greatest determinant of post-meal BG
- Choose nutrient-dense, **high-fiber** carbs instead of processed foods with added sodium, fat, and sugars.
- Nutrient-dense foods and beverages (e.g., milk) provide vitamins, minerals and other healthful substances with less calories.

P = **P**rovide lean **protein** for **health**, **15-19%** of calories, if no renal impairment.

- In T2 DM: no significant effect on BG
- In T1 DM: effect on BG is less clear

L = **L**ower **total fat** to **20 - 35%** of calories to ↓ CVD risk, CMR, obesity (per IOM)

L = **L**et fat **quality** be more important than **quantity;** replace SFA with MUFA, PUFA (BG, Lipids)

A = **A**llow non-nutritive sweeteners (NNSs) as they can ↓ calorie and carbohydrate intake if substituted for caloric sweeteners.

N = **N**ibble on **nuts,** 5 oz./week, especially walnuts, pecans, almonds, pistachios (Lipids, CMR)

N = **N**otify non-insulin pts it is not necessary to subtract amount of dietary fiber or sugar alcohols from total carbohydrates when carbohydrate counting.

Weight Management

- Assess relative importance of weight management for overweight and obese diabetes pts

Studies show that sustained wt loss interventions lasting ≥ 1 yr had *inconsistent* effects on A1C, even though modest wt loss shown to improve insulin resistance in overweight and obese insulin-resistant persons.

Strong and Conditional

Why?[1]

1. Calorie **deficit** during wt loss results in BG improvement almost immediately and **before** wt loss occurs, resulting in better A1c

- In **wt maintenance** phase, calorie deficit eliminated
- Bariatric surgery; BG improves quickly **before** weight loss
  - Improvement may result from nutrients diverted away from GI tract and incompletely digested nutrients to ileum

1. The Dilemma of Weight Loss in Diabetes, Franz Marion J. MS, RD, LD, CDE, Diabetes Spectrum July '07 vol. 20 no. 3 133-136

2. In **early** stages of T2, **insulin resistance** is *predominant* metabolic error….not insulin deficiency

- Calorie deficit ↓ BG almost immediately in resistant phase
- When T2 progresses from insulin resistance TO insulin deficiency, BG benefits of calorie deficit and wt loss ↓
- Treatment focus in **insulin deficiency** stage of T2:
  - Prevent weight gain
  - Combine meds (also insulin) with MNT
  - Seek glycemic control over weight control
    - Control requires key interventions working together:
      - Healthy eating, exercise, meds, stress control

THE BOTTOM LINE

Eating less calories

and

getting regular physical activity

improves BG control

independent of

body weight

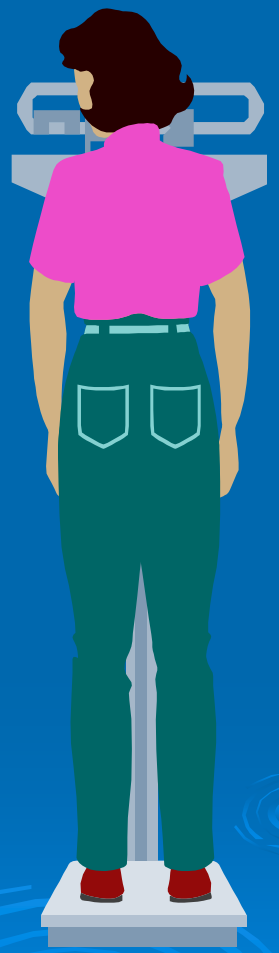
and

weight loss.

After 2 year loan to United States, Michelangelo's David being returned to Italy

Look at what excess calories and no exercise has done to David!

So what **ARE** the key, appropriate messages concerning weight loss for people with diabetes**?**



Set realistic weight goals

- Unrealistic wt goal is strong predictor of wt loss failure (4)
- Majority can expect to lose 5–10% of starting wt
- Successful long-term wt management requires ↓ in calories, exercise, and behavioral modification
- When wt loss plateaus, encourage same lifestyle strategies that led to wt loss to prevent wt regain
- Are no magical diets or specific foods to eat

(4) Grave RD, Calugi S, Molinari E, Petroni ML, Bondi M, Compare A, Narchesini G, the QUOVADIS Study Group: Weight loss expectations in obese patients and treatment attrition: an observational multicenter study. *Obes Res* **13**:1961 –1969,2005

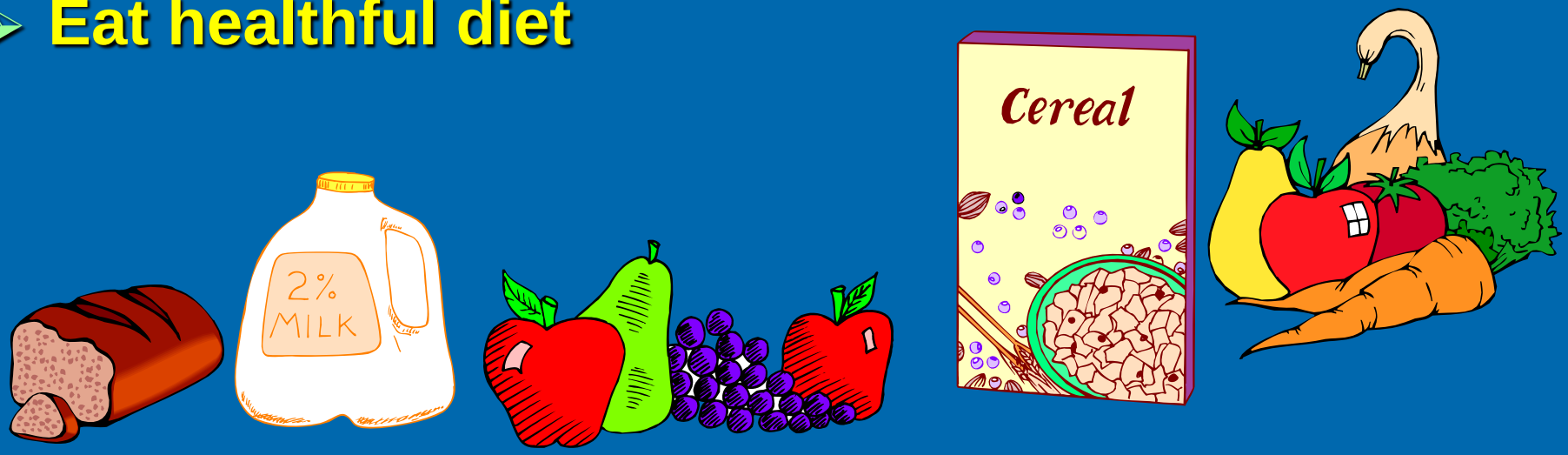
Encourage regular physical activity

- BG benefits of fitness are **independent of wt loss**
- Low cardio-respiratory fitness and physical inactivity shown to be independent **predictors** of all-cause mortality in men with type 2 diabetes **regardless of their weight** (2)
- Even increased BMI did **not** ↑ mortality risk in **fit men** with T2 diabetes (3)

(2) Wei M, Gibbons LW, Kampert JB, Nicaman MZ, Blair SN: Low cardio-respiratory fitness and physical activity as predictors of mortality in men with type 2 diabetes. *Ann Intern Med* **132**:605 –611, 2000

(3) Church TS, Cheng YJ, Earnest CP, Barlow CE, Gibbons LW, Priest EL, Blair SN: Exercise capacity and body composition as predictors of mortality among men with diabetes. *Diabetes Care* **27**:83 –88, 2004

- **Eat healthful diet**



- Keep combined **food** and **BG records** to optimize BG control so that medication can be added or adjusted when needed

Meal Plans/Eating Patterns: One Size Does NOT Fit All

- Variety of eating patterns acceptable
- Pt's plan determined by assessment of:
  - Personal factors: tradition, culture, religion, etc.
  - Economics
  - Co-morbid conditions
  - Lab values and metabolic goals
  - Medications
  - Physical activity

Meal Plans/Eating Patterns: One Size Does NOT Fit All

- **Psychosocial factors**
  - Patient's wishes…paramount!
  - Willingness and ability to follow meal plan
  - Appetite
  - Preferred foods
  - Usual eating habits
  - Daily schedule, family concerns, etc.
- Maintaining **pleasure of eating** by only limiting food choices when indicated by scientific evidence

Meal Plans/Eating Patterns: One Size Does NOT Fit All

- **Options**
  - Dietary Guidelines for Americans and RDAs
  - Plate Method
  - MyPyramid (food guidance system by USDA)
  - Glycemic Index + Load (Carb “Quality” + Quantity)
  - Choose Your Foods: Exchange Lists for Diabetes

Meal Plans/Eating Patterns: One Size Does NOT Fit All

- **Options**
  - **Mediterranean-style, MUFA-rich** eating pattern may benefit glycemic control and CVD risk factors and can therefore be recommended as effective alternative to a **lower-fat, higher carbohydrate** eating pattern

Standards of Medical Care in Diabetes, *Diabetes Care* 2015

Meal Plans/Eating Patterns: One Size Does NOT Fit All

- **Options**
  - Vegetarian, vegan
  - Low fat
  - Low carbohydrate
  - DASH diet

Standards of Medical Care in Diabetes, *Diabetes Care* 2015

Meal Plans/Eating Patterns: One Size Does NOT Fit All

- **Options:**
  - Individualized carb counting:
    - Basic
    - Advanced (insulin:carb ratio for pt)
    - **Estimated** average carb amount based on:
      - Gender
      - Weight goal: to lose or control weight
      - Active patients

Estimating Average Carb Amount* per Gender, Weight Goal and Activity

	To Lose Wt: Carb Servings Per Meal	To Control Wt: Carb Servings Per Meal	Active Pts: Carb Servings Per Meal
Women	3-4 (45-60 g)	4-5 (60-75 g)	5-6 (75-90 g)
Men	4-5 (60-75 g)	5-6 (75-90 g)	6-7 (90-105 g)

*** NOT individually determined per pt's weight, wt goal, and BG targets**

Meal Plans/Eating Patterns: One Size Does NOT Fit All

- **Options:**
  - Simplified approaches:
    - The First Step in Diabetes Meal Planning
    - Healthy Food Choices
    - Eating Healthy With Diabetes: Easy Reading Guide
    - Healthy Eating for People with Diabetes

Carbohydrate Monitoring

- **Monitoring carb** intake is key strategy in achieving glycemic control whether by:
  - Carb counting
  - Food exchanges
  - Experienced-based estimation
  - Other meal planning systems

But should pt's monitoring of carb intake be done separately from BS monitoring?

Carbohydrate Monitoring

15 g carb = 1 carb serving, choice, exchange

Exchanges	=	Carbohydrate Choices
2 starch	=	2 carb choices
1 fruit	=	1 carb choice
1 milk	=	1 carb choice
3 meat	=	0 carb choice
2 fat	=	0 carb choice

Example:

- **Breakfast:** **3 carb choices = 45 grams**
- **Lunch:** **2 carb choices = 30 grams**
- **Snack:** **1 carb choice = 15 grams**
- **Dinner:** **3 carb choices = 45 grams**
- **Evening Snack:** **1 carb choice = 15 grams**

Diet to include *healthier* carbs:

- Fruits
- Vegetables
- Whole grains
- Lentils and legumes
- Low-fat dairy

Advanced Carb Counting

- **Equivalent to using insulin-to-carb ratio when on basal-bolus insulin therapy**
  - Ratio = # units insulin to cover x gm carbs eaten at meal
  - Ratio can be same for all 3 meals or not
  - Individualized for pt, based on total daily dose of insulin (basal + bolus/mealtime insulin) using

500 RULE: 500 ÷ TTD

Ex: 500 ÷ 50 = 10 g carb

Ratio = 1 unit bolus insulin given for every 10 g carb

or 6 units insulin for every 60 g carb

Macronutrients in Meal Plan

- Research does **NOT** support ***ideal*** % of calories from macronutrients: **carbohydrate, protein, fat**

- % based on **individualized** needs:
  - Eating patterns, preferences, metabolic goals, etc.

- Encourage consumption based on *Dietary Reference Intakes* (DRI) for healthy adults

Strong, Imperative

Macronutrients in Meal Plan

- Metabolic goals include (not limited to):
  - Weight
  - BG
  - Lipids
  - BP
  - GFR
  - etc.

Do you have any questions for me before we move on?

Carbohydrate Amount to be Individualized, Per Review of:

- **Individualized clinical goals:**
  - Weight
  - BMI goal
  - Lab values (esp. pre- and post-meal BG)
- **Other clinical and nutritional factors:**
  - Co-morbidities
  - Meds (integrated into pt's lifestyle, not reverse)

Consistent Carbohydrate Intake

- For pts on:
  - MNT alone***; see slide 68; will MNT now be alone?***
  - MNT + glucose-lowering medications or
  - MNT + **fixed** insulin doses

Meal and snack carb intake to be kept

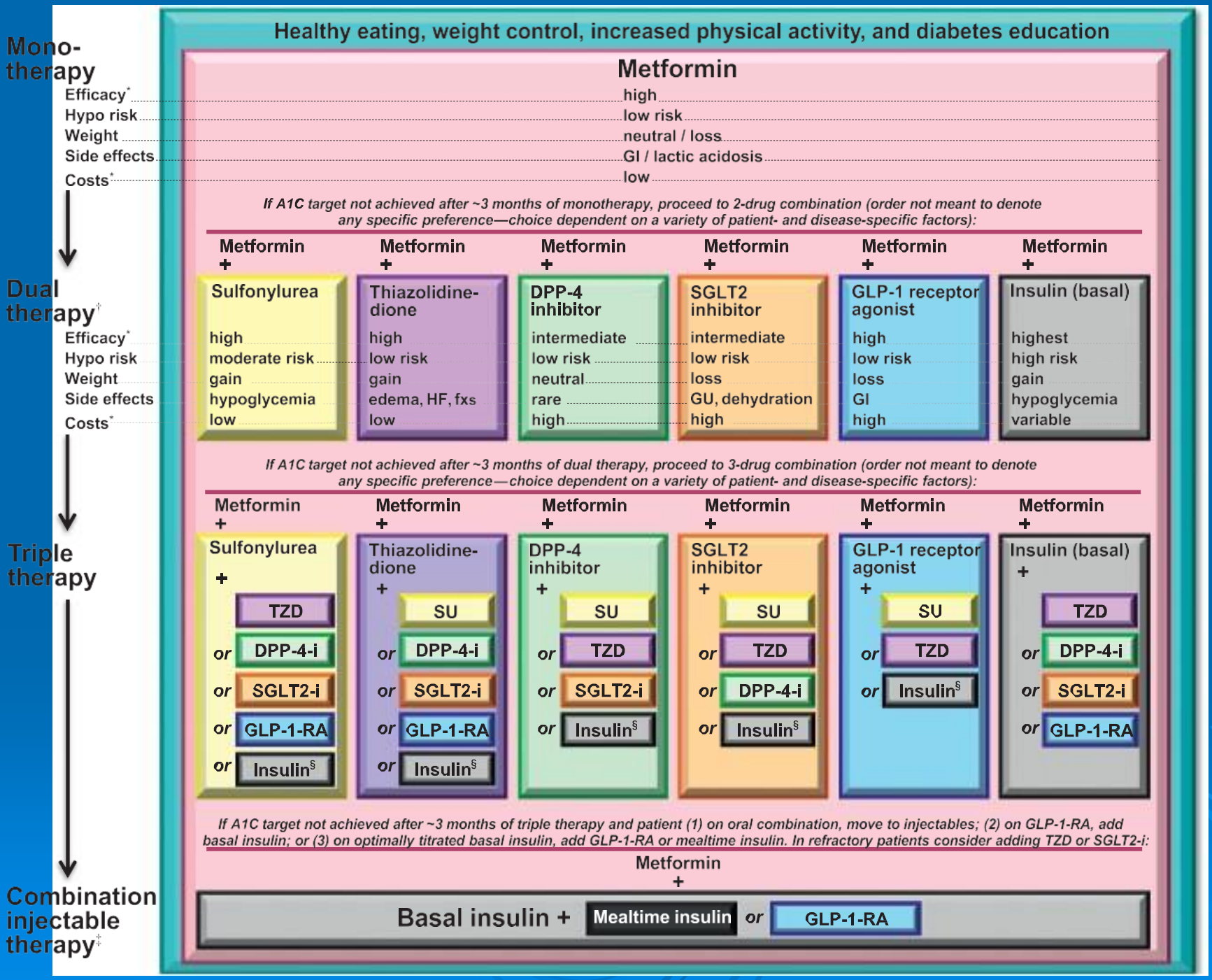
consistent on day-to-day basis.

Consistency in carb intake results in *improved* glycemic control.

Strong, Conditional

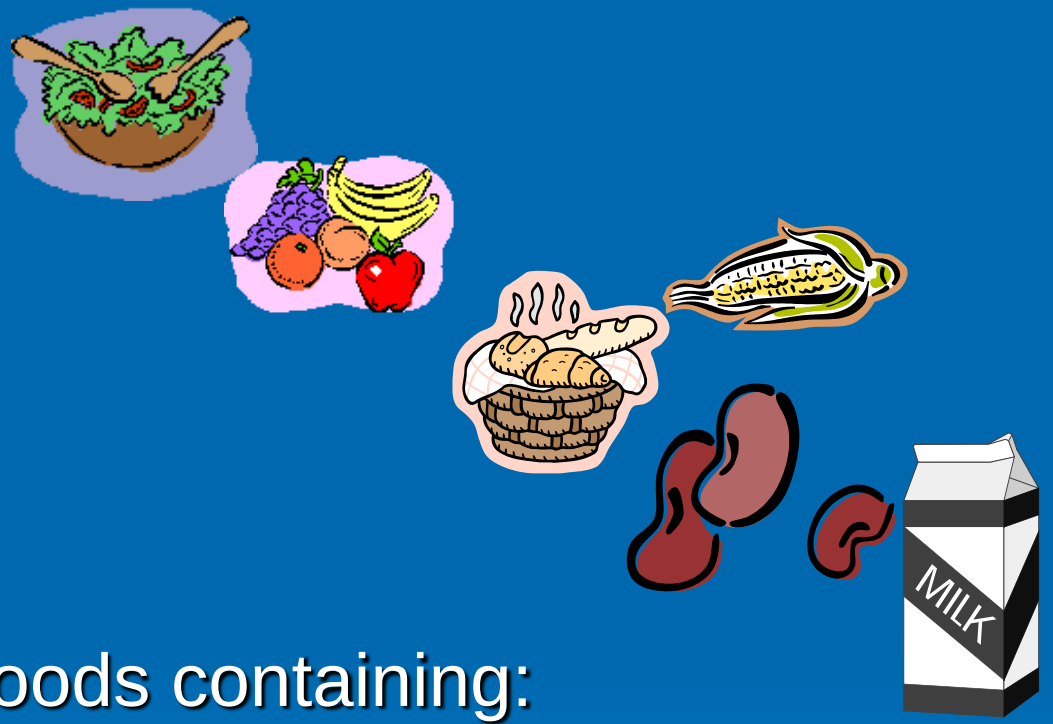
Algorithm for Management of Type 2 Diabetes

Standards of Medical Care in Diabetes, *Diabetes Care* 2015

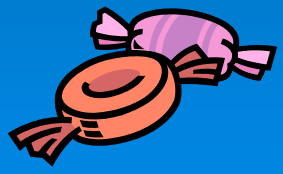

Healthy eating, weight control, increased physical activity, and diabetes education
Mono-therapy
Efficacy*
Hypo risk
Weight
Side effects
Costs*
Metformin
high
low risk
neutral / loss
GI / lactic acidosis
low
If A1C target not achieved after ~3 months of monotherapy, proceed to 2-drug combination (order not meant to denote any specific preference—choice dependent on a variety of patient- and disease-specific factors):
Dual therapy†
Efficacy*
Hypo risk
Weight
Side effects
Costs*
Metformin + Sulfonylurea
high
moderate risk
gain
hypoglycemia
low
Metformin + Thiazolidine-dione
high
low risk
gain
edema, HF, fxs
low
Metformin + DPP-4 inhibitor
intermediate
low risk
neutral
rare
high
Metformin + SGLT2 inhibitor
intermediate
low risk
loss
GU, dehydration
high
Metformin + GLP-1 receptor agonist
high
low risk
loss
GI
high
Metformin + Insulin (basal)
highest
high risk
gain
hypoglycemia
variable
If A1C target not achieved after ~3 months of dual therapy, proceed to 3-drug combination (order not meant to denote any specific preference—choice dependent on a variety of patient- and disease-specific factors):
Triple therapy
Metformin + Sulfonylurea + TZD or DPP-4-i or SGLT2-i or GLP-1-RA or Insulin§
Metformin + Thiazolidine-dione + SU or DPP-4-i or SGLT2-i or GLP-1-RA or Insulin§
Metformin + DPP-4 inhibitor + SU or TZD or SGLT2-i or Insulin§
Metformin + SGLT2 inhibitor + SU or TZD or DPP-4-i or Insulin§
Metformin + GLP-1 receptor agonist + SU or TZD or Insulin§
Metformin + Insulin (basal) + TZD or DPP-4-i or SGLT2-i or GLP-1-RA
If A1C target not achieved after ~3 months of triple therapy and patient (1) on oral combination, move to injectables; (2) on GLP-1-RA, add basal insulin; or (3) on optimally titrated basal insulin, add GLP-1-RA or mealtime insulin. In refractory patients consider adding TZD or SGLT2-i:
Combination injectable therapy‡
Metformin +
Basal insulin + Mealtime insulin or GLP-1-RA

Choose HEALTHY Carb for Good Health

- Vegetables
- Fruits
- Whole grains
- Legumes
- Dairy products



- **Instead of** carb foods containing:
  - Added fats, sugars or sodium



Carbohydrate Intake: MDI Patients

- For pts on **multiple daily insulin injections:**
  - Meal/snack carb intake need **NOT** be **consistent**
  - Insulin dose adjusted to match carb intake, using **insulin-to-carb ratio**

- Pre-meal insulin dose based on **planned** carb intake and pre-meal BG level
  - Intake can vary meal-to-meal and day-to-day
  - BG control + quality of life improved **without** adverse effects

Strong, Conditional

Carbohydrate Intrinsic Factors DO Affect Glycemic Response

1 frosted cupcake = 2 slices bread

in grams carbohydrate: 30 g

But what is in cupcake that will cause BG response to be different than that of 2 slices of bread?

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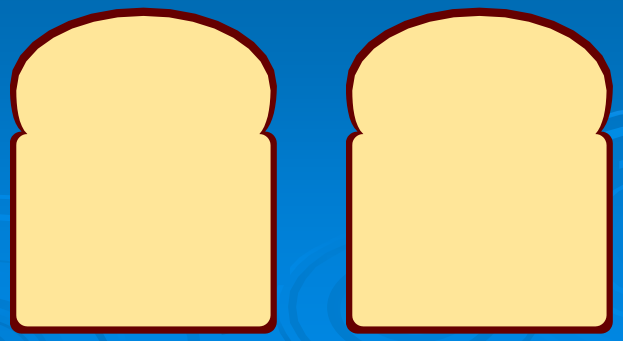


Glycemic Index (GI) of Food

- Compares postprandial **BG increases** to constant amounts of different carb foods **(how high BG rises)**

- Is **increase** above **FBS** in BG area 2 hr after eating constant amount of **tested** food (50 gm carb) ***divided by*** response to **reference** food (glucose or white bread: **GI = 71**)

Low GI food = <55

Medium GI food = 55 - 69

High GI food = ≥70

- **Conflicting** evidence of ‘ effectiveness as meal plan strategy
- High vs. low GI diets report ***mixed effects*** on A1C

Fair, Conditional

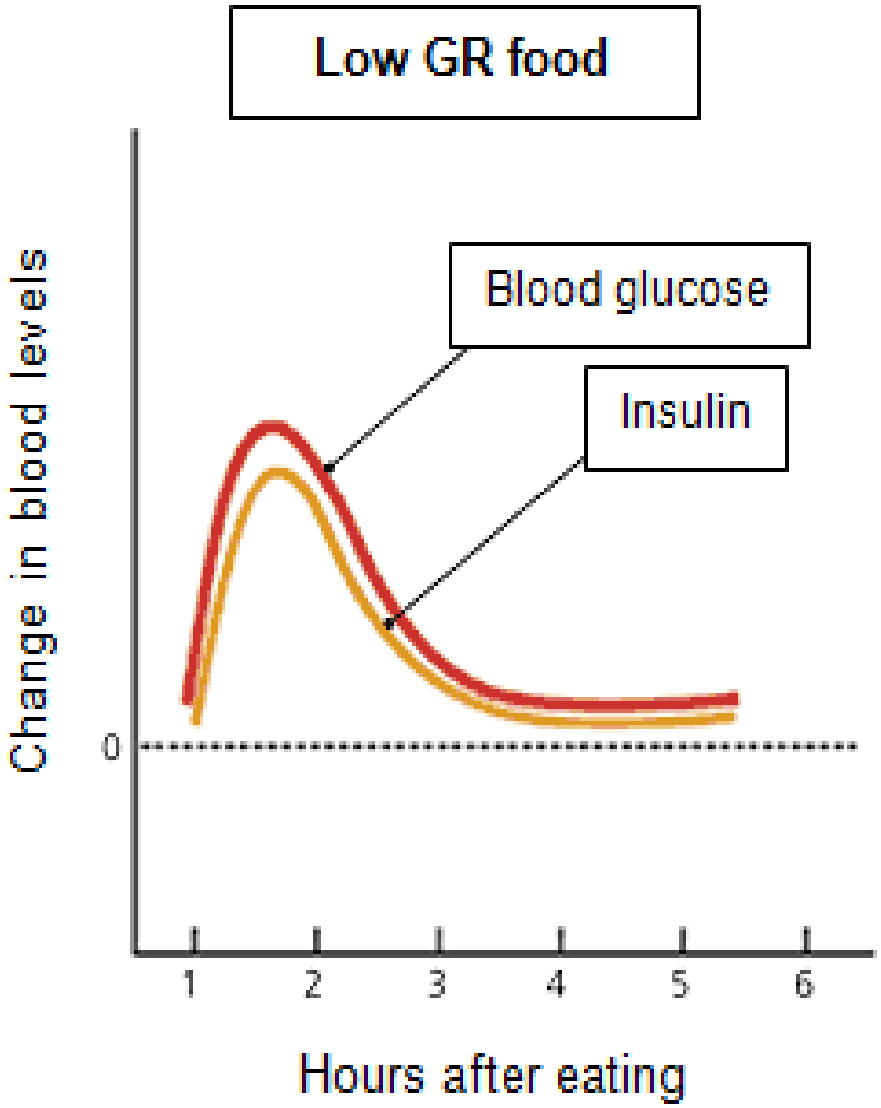
- **Glycemic index** and **glycemic load** may provide ***modest*** additional benefit for glycemic control over that observed when total carbohydrate considered alone

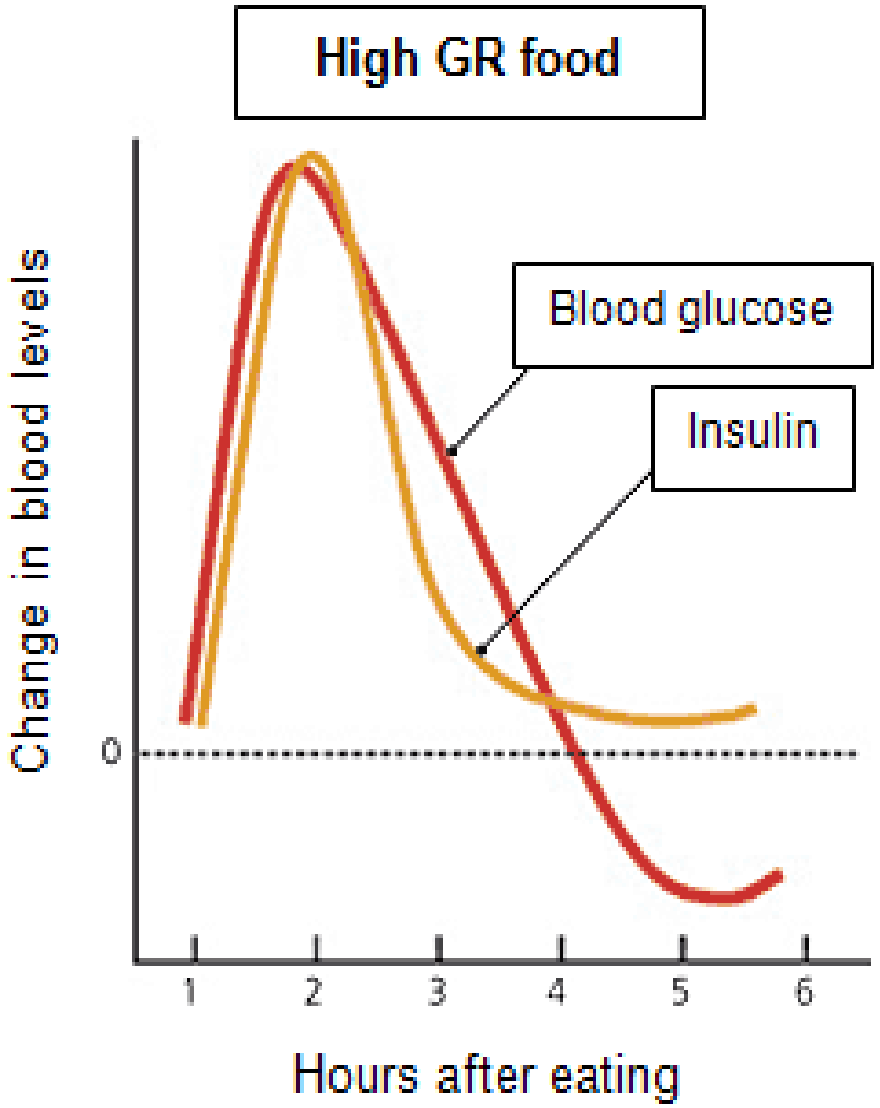
Glycemic Index

- Measures **how high** BG rises after carb eaten
  - **Low** GI carbs produce only **small rise** in BG
  - **High** GI carbs produce **larger rise** in BG
- Does **NOT** measure how **rapidly** BG levels ↑
- Non-carb foods (meat, fish, eggs, avocado, wine, beer, spirits, *most* vegetables) do **NOT** have GI value.

No Carbs = No GI Value

Fair, Conditional


Low GR food
Blood glucose
Insulin
Change in blood levels
0
1
2
3
4
5
6
Hours after eating


High GR food
Blood glucose
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Hours after eating

Factors Affecting Glycemic Index

- Fiber content
- Type of carbohydrate (molecular structure)
- Type of starch
  - Amylose: **hard** to digest tightly packed starch granules
  - Amylopectin: **easier** to digest loosely packed starch granules
- Ripeness (raw bananas and potatoes more resistant to digestion in small intestine than ripe)
- Raw (more resistant to digestion) vs. cooked starch food
- Cooking method: amount of heat and moisture used
- Cooking time
- Food processing

High GI Foods

- Breakfast cereals
- Instant rice, instant mashed potatoes
- Pretzels
- Watermelon
- Honey
- White bread

Low GI Foods

- Legumes, beans, lentils
- Grapefruit, apple, orange
- Oats, barley, bulgur wheat
- Basmati rice
- Pasta
- Whole milk
- Snicker's bar
- Ice cream, yogurt
- Apples, oranges

Glycemic Load: GL

- Ranking of **rise in BG** based on **BOTH**:
  - **GI** of food AND amount of **carb eaten**
- Combines "quality" + "quantity" of carb in one number:

GL =

GI x amount carb gm eaten (less fiber) ÷ 100

Low GL = <10

Medium GL = 10 – 19

High GL = ≥20

Food	GI	Carb gm eaten less fiber	GL
Capellini pasta, cooked	45 low	45 g	20 high
Watermelon	72 high	6 g	4 low

Low GI food = <55
Medium GI food = 55 - 69
High GI food = ≥70

Low GL = <10
Medium GL = 10 – 19
High GL = ≥20

If you do eat small amount of high GI food like WATERMELON, you still can get a lower GL!

GI = 76 (high)

Carb in 1 cup = 11 gm

Dietary fiber = 0.6 gm

GL = GI x amount carb gm eaten (less fiber) ÷ 100

76 x 11 ÷ 100 = 8.36 (low GL)

But if you eat large amount of WATERMELON, you will get a high GL!

GI = 76 (high)

Carb in 4 cups = 44 gm

Dietary fiber = 2.4 gm

GL = GI x amount carb gm eaten (less fiber) ÷ 100

76 x 41.6 ÷ 100 = 31 (high GL)

BUT……

See how you can eat large amount of low GI food like BOILED CARROTS, and still get low GL!

GI = 39 (low)

Carb in 1 cup = 8 gm; dietary fiber = 5.22 g

Carb in 4 cups = 32 gm

Dietary fiber = 20.88 gm

GL = GI x amount carb gm eaten (less fiber) ÷ 100

76 x 11.12 ÷ 100 = 8.45 (low GL)

Bottom Line: GI and GL

- GI alone or GL alone **NOT** to be only used meal planning system used

  - Why?

    Initial focus to be on **total carb eaten**

  - GI and GL can be used to help pts understand WHY carb counting alone may NOT always be perfect

My mother taught me about the science of Osmosis -

"Shut your mouth and eat your supper!"

Spacing of Meals

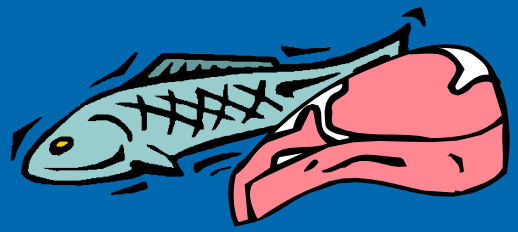
- MNT as **monotherapy (BUT is it ever alone?)**
  - **3** moderate meals or **4** smaller meals
- Snacks based on pt's schedule and preferences
- MNT with **oral anti-diabetes agents:**
  - Moderate to small in size
  - Snacks **NOT** needed unless risk of low BG
  - Maintain **consistent** timing of meals and carbs

Spacing of Meals

- MNT with **insulin:**
  - Keep meals moderate to small in size
  - Patients on **fixed** insulin regimens:
    - Emphasize consistency in
      - Meal timing and carb intake
  - Pts on **intensive (flexible)** insulin regimens:
    - ID pre-meal insulin doses based on:
      - Planned amount of carb to be eaten
      - Pre-meal BG level

Protein Intake with Normal Renal Function

- Acute effect on insulin secretion BUT usual protein intake has minimal effect on:
  - BG
  - Lipids (if ***lean*** protein chosen)



- With normal renal function, provide usual protein intake for health: **~ 15 to 20% of calories**
- Does **NOT** significantly slow absorption of carbohydrate food
- Adding protein **NOT** shown to treat or prevent low BG!

Fair, Conditional

Classifying Overweight and Obesity by BMI, Waist Circumference and Associated CVD Risk

	BMI	Obesity Class	CVD Risk Rating: WC: Men ≥ 40” WC: Women ≥ 35”
Underweight	< 18.5		
Normal	18.5 to 24.9		
Overweight	25 to 29.9		High
Obesity	30 to 34.9	I	Very High
Obesity	35 to 39.9	II	Very High
Extreme Obesity	≥ 40	III	Extremely High

Vitamins, Minerals, Antioxidants

- No clear evidence of benefit from supplementation in diabetes persons **without** deficiencies
- Supplementation with **antioxidants** (vitamins E, C, b-carotene and **selenium**) **NOT** advised, per study[1]
  - Efficacy and long-term evidence safety **not** clear
  - **↓ Rx niacin's ability to ↑ HDL in study**
- Chromium supplementation benefit ***NOT*** clearly demonstrated; cannot be recommended

1. Atherosclerosis and Lipoproteins: Antioxidant Supplements Block the Response of HDL to Simvastatin-Niacin Therapy in Patients With Coronary Artery Disease and Low HDL, Marian C. Cheung, Xue-Qiao Zhao, Alan Chait, John J. Albers, B. Greg Brown, Arteriosclerosis, Thrombosis, and Vascular Biology. 2001; 21: 1320-1326, http://atvb.ahajournals.org/content/21/8/1320.short

Statin and Niacin Combination

- Combination statin therapy with niacin is not recommended given the lack of efficacy on major CVD outcomes, possible increase in risk of ischemic stroke, and side effects.

Standards of Medical Care in Diabetes, *Diabetes Care* 2015

Sucrose: Sugar is NOT the Enemy!

- Sucrose-containing foods to be substituted for other carb foods in meal/snack

- Intakes of 10 - 35% of total cal:
  - Do ***NOT*** ↑ BG or lipids when substituted for isocaloric amounts of other carbs
  - Will **NOT** aggravate hyperglycemia

- Fat ingested with sucrose (ice cream!) will ↑ calories
- Most high sugar foods low in other healthful nutrients

Strong, Conditional

- Sugar and carbohydrate counting:
  - Must ignore grams of sugar on ***Nutrition Facts*** label
  - Sugar included in total grams carbohydrate
    - Includes BOTH:
      - Added sugar
      - Natural sugars in foods

Fructose-Containing Foods

- Sucrose + high-fructose corn syrup rapidly absorbable
- Sugar-sweetened beverages (SSB) are high in
- Large amount of SSBs to be avoided to ↓ risk for:
  - Weight gain
  - Cardiometabolic risk factors
  - Particularly adverse effects on selective deposition of ectopic and visceral fat, lipid metabolism, BP, insulin sensitivity, and de novo lipogenesis, compared with glucose-sweetened beverages

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Non-Nutritive Sweeteners

- For FDA-approved non-nutritive sweeteners, at levels that do **not** exceed ADIs (Acceptable Daily Intakes) RD to advise pt that:
  - **Some may contain cal and carbohydrate from other sources that need to be accounted for**
- Research on non-nutritive sweeteners reports **NO** effect on changes in glycemic response

Fair, Conditional

Some Sugar Substitutes Have Calories

- **Non-nutritive** (calorie-free)
  - Aspartame (Equal®, NutraSweet®)
  - Saccharine (Sweet ‘N Low®, Sugar Twin®)
  - Sucralose (Splenda®)
  - Acesulfame K (Sweet One®)
- **Nutritive** (2 cal/gm)
  - Sugar alcohols (sorbitol, mannitol, xylitol)
  - Fructose

Sugar Alcohol and Carb Counting

Carb counting: subtract ½ of sugar alcohol on label when ≥ 5 g

Example: 6 pieces sugar-free candy

Sugar Alcohol = 10 g

= 30 g total carbohydrate

- 5 g sugar alcohol

= 25 g carb to count

Most appropriate for ***insulin-carb ratio*** pts

Nutrition Facts

Serving Size: About (20g)
Servings Per Container: 16

	Amount Per Serving	% Daily Value*
Total Calories	60	
Calories From Fat	15	
Total Fat	2 g	3%
Saturated Fat	1 g	4%
Trans Fat	0 g	
Cholesterol	0 mg	0%
Sodium	45 mg	2%
Total Carbohydrates	15 g	5%
Dietary Fiber	4 g	17%
Sugars	4 g	
Sugar Alcohols (Polyols)	3 g	
Protein	2 g	
Vitamin A		0%
Vitamin C		0%
Calcium		2%
Iron		2%

*Percent Daily Values are based on a 2,000 calorie diet.

Ingredients: Wheat flour, unsweetened chocolate, erythritol, inulin, oat flour, cocoa powder, evaporated cane juice, whey protein concentrate, corn starch (low glycemic), natural flavors, salt, baking soda, wheat gluten, guar gum

Alcohol

- If used, intake limited to:
  - ≤1 drink/day for women….≤ 2 drinks/day for men
  - ↓ risk of CVD
- Consume with food **(caution: any food?)** to ↓ risk of hypoglycemia in pts using:
  - Insulin and insulin secretagogues
  - Empty stomach: 2 oz. alcohol/1-2 drinks can cause ↓ BG
- If not on Insulin/insulin secretagogues, moderate intake on empty stomach: no acute effect on BG, insulin concentration
  - BUT: carb eaten with alcohol (mixed drink) may ↑ BG

General Alcohol Guidelines

- Avoid alcohol intake on empty stomach
- Drink in moderation
- Provider may ↑ DM meds during heavy drinking
- Excess can worsen neuropathy, retinopathy, HTN, TG, pancreatitis
- Contains empty calories and can contribute to wt gain
- 1 drink or 15 g alcohol equals:
  - 1.5 oz. shot of hard liqueur and brandy
  - 5 oz. wine or 2 oz sherry
  - 12 oz. beer (preferably light to ↓ carb)

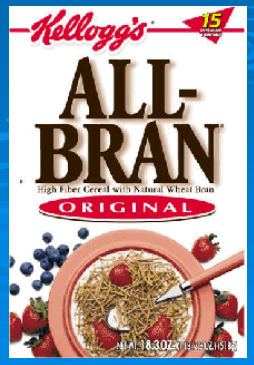
Total Fiber Intake and Glycemia

- Recommendations similar to general public
  - DRI = 14 g per 1000 kcal
- High intake 44 to 50 g day **improves glycemia**, but:
  - ***Unknown*** if daily amount consumable due to:
    - Limited ↑ fiber choices, GI effects, palatability
- Usual fiber intake (up to 24 g daily) ***not*** shown to have beneficial effects on glycemia
- Carb from **dietary fiber** included in total gms carb on label

Strong, Imperative

- Total fiber = combination of:
  - **Insoluble** at 0 kcal and 0 gm carb
    - Not digested, not absorbed
  - **Soluble** at 1.5 to 2.5 kcal/gm
    - Some energy yielded from by-products (free fatty acids) of **soluble** fiber fermentation in colon
    - Free fatty acids = food for gut-friendly bacteria

- Good sources of **fiber**:
  - Whole grain cereals
  - Fruits
  - Vegetables
  - Beans and peas



Fiber and Carbohydrate Counting

Subtract ½ of fiber on food label when dietary fiber = ≥ 5 g

Ex: Total Fiber = 14 g

1 c. cereal = 30 g total carbohydrate

- 7 g dietary fiber

= 23 g carb to count

- Most appropriate for ***insulin-carb ratio*** pts
- "Net Carb", "Impact Carb" **not** defined by FDA
  - Created by co's to give products more shelf appeal

Blood Glucose Monitoring (SMBG)

- Improves BG **w**hen data used to adjust therapies
- To do whether on *MNT alone* OR *MNT + Rx meds*
- Frequency + timing depends on:
  - Type of DM
  - Co-morbidities
  - Level of BG control
  - Diabetes meds
  - Risk of hypoglycemia
  - Physical activity
  - Pt willingness and ability

Fair, Conditional

As I do have diabetes, it's important to me,
To monitor my blood sugar frequently.

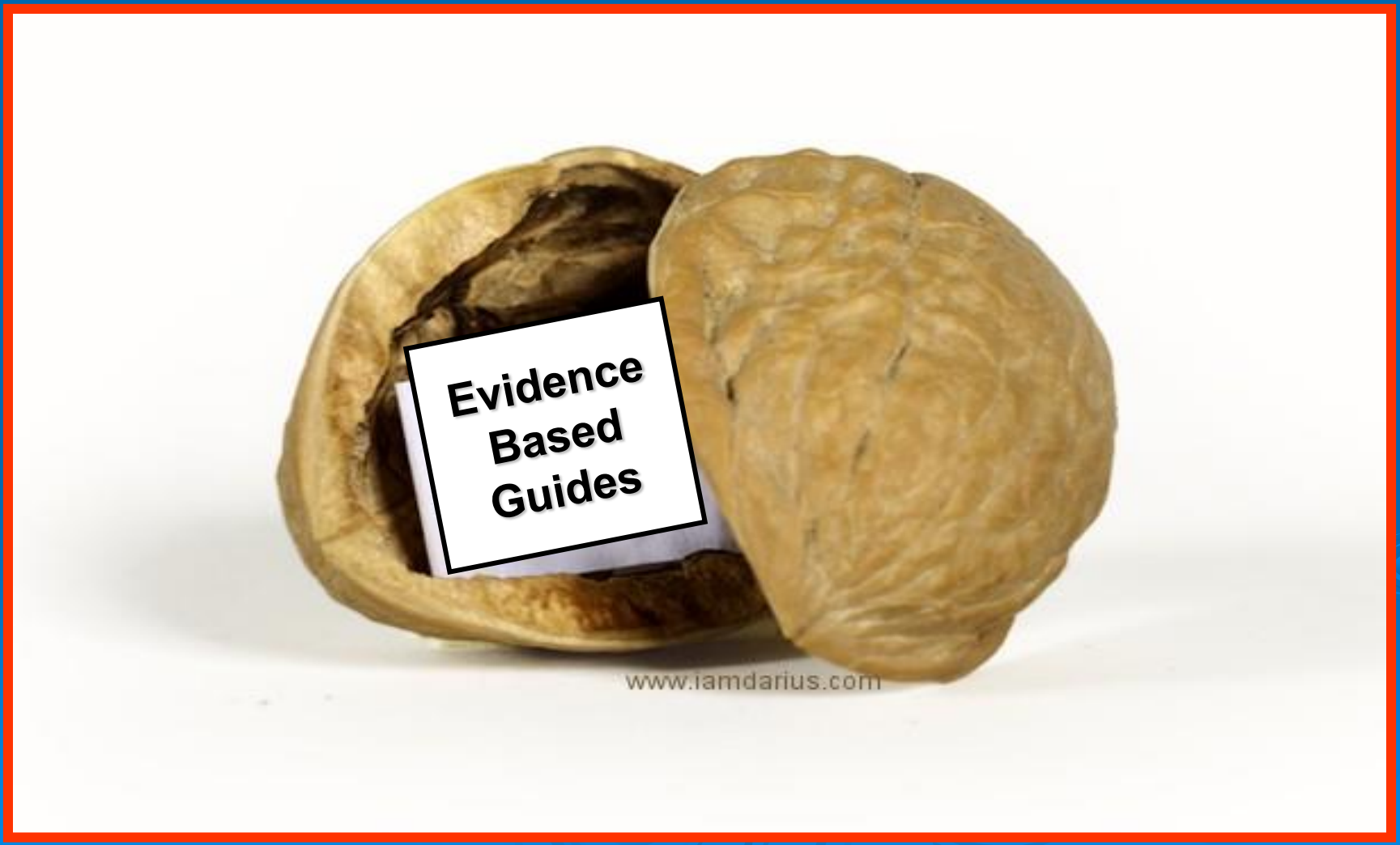
Up and down my sugars sometimes go,
For sure I want to avoid a low!

Also want to know when my sugar is high,
A change in medication, could be the thing to try.

If still not at target, my BG logs will be key,
To help my educator and I the new plan to see.

My health and blood sugar……so joined at the hip,
The educator reviewing my logs is so worth the trip!

Cardio-Protective Nutrition Guidelines in a Nutshell



Cardio-Protective Nutrition for Prevention and Treatment of CVD

- Reduces CV risk and improves CV outcomes
- **UGH: 2 out of 3 persons with diabetes will die from CVD!**
- Implement interventions in initial series of encounters:

1. ↓ saturated fat (<5% of cal/day) and ↓ *trans* fats (0 g/day)
2. ↓ dietary cholesterol (≤300 mg/day)
3. ↑ dietary fiber……esp. soluble/viscous fiber, 7 – 13 g/day
4. ↑ plant stanols/sterols (2 -3 g/day; >3g = no extra benefit)
5. ↑ antioxidant-rich foods (not supplements)

6. Exercise! (≥30 min. most days of week, moderate intensity)
7. Re-evaluate lipid meds: dosage and necessity
8. Achieve and maintain healthy weight
9. Evaluate CVD risk factors: waist circumference, WHR BMI
10. Limit monounsaturated fat to 20%, polyunsaturated fats, 10%
11. Encourage high n3 fatty fish to 2-3 x/week + plant fatty acids
13. Limit alcohol intake to “moderate” (1 drink/day F, 2/day Male)

14. Eat 5 oz. nuts/wk (esp. walnuts, pecans, almonds, pistachios)

15. Improve BP with nutrition:

- Limit sodium to ≤2300 mg/day
- Ensure adequate intake of calcium, magnesium, potassium
- Adopt **Dietary Approaches to Stop Hypertension (DASH)** diet (rich in fruits, vegetables, low-fat dairy, nuts; low in sodium, total fat, saturated fat; and adequate in calories for weight management. Reduces systolic blood pressure by 8-14 mmHg

16. Improve BP with Rx medication, if needed (next slide)

BP Goal for PWDs and HTN Treatment

BP	Lifestyle Therapy (LT) *	HTN Meds, ACE Inhibitor or ARBs	Thiazide or Loop Diuretic
*LT advised when BP >120/80 **Goal:** **S: <140** **D: <90**	• DASH Diet • ↓ Na to <2300 mg/day • Weight Loss if needed • Physical Activity • Moderate Alcohol • ↑ Potassium		
IF Not at **Goal**	**Continue Lifestyle Therapy**	**ADD HTN Med(s): If >1 med, 1 to be ACE or ARB (if 1 not tolerated, other to be used)**	
Est GFR of ≥30	**Renal MNT**		ADD thiazide diuretic
Est GFR of <30	**Renal MNT**		ADD loop diuretic

Dietary Fats and Cholesterol

- Total fat intake: ↓ to 25 - 35% of calories
- Saturated fat: <7% of calories
- *Trans* fats: avoid as much as possible
- Dietary cholesterol: <200 mg/day
  - ↓ LDL-C up to 16%
  - ↓ risk of CHD

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- Can replace **saturated fat** calories with:
  - Polyunsaturated fats (**OK**)
  - Monounsaturated fats (**BEST**)
  - Protein (lean)
  - Higher fiber carb ***IF*** carb does ↓ LDL-C ***without*** ↓ HDL-C or ↑TG
- Ideal %'s of carb, protein replacement unclear

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Fiber, Cholesterol and Heart Health

- Include foods containing **25 - 30 g TOTAL fiber/day**, with special emphasis on **soluble fiber** sources
  - **Soluble fiber goal: 7 - 13 g/day**
  - **↑ VISCOUS fiber to improve lipid profile**
- Diets high in total fiber + soluble fiber can further ↓:
  - Total-C by 2 - 3%
  - LDL-C up to 7%

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Fiber, Cholesterol and Heart Health

- As fiber ↑, risk factors for CHD ↓:
  - BP
  - Lipoprotein sub-classes and particle sizes
  - Insulin resistance
  - Post-prandial BG
  - CVD (fatal and non-fatal MI, and stroke)
- Can further ↓
  - TC by 2 - 3%.....LDL up to 7%

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n3 Fatty Acids in Foods and Heart Health

- **Omega 3** benefits to overall heart health:
  - ↓ inflammation inside arteries and rest of body
  - At high doses, ↓ risk of abnormal heart rhythms
  - ↓ blood triglycerides
  - ↓ rate of plaque buildup inside blood vessels
  - Slightly ↓ blood pressure

Fair, Conditional

AHA 2015 Recommendations n3 Fatty Acids

Patients without documented CHD	Eat variety of (preferably fatty) fish at least twice a week. Include oils and foods rich in alpha-linolenic acid (flaxseed, canola and soybean oils; flaxseed and walnuts).
Patients with documented CHD	Consume about 1 g of EPA+DHA per day, preferably from fatty fish. EPA+DHA in capsule form could be considered in consultation with the physician.
Patients who need to ↓ triglycerides	2 to 4 grams of EPA+DHA per day provided as capsules under a physician's care.

http://www.heart.org/HEARTORG/GettingHealthy/NutritionCenter/Fish-101_UCM_305986_Article.jsp

n3 Fatty Acids in Foods and Heart Health

- **WITHOUT** CHD: n3-rich **FISH**
  - 2 servings per week (3.5 - 4 oz. each)
    - ↓ mercury: canned light tuna, salmon, pollock, catfish
    - Scallops, shrimp, clams, flounder, cod, sole
    - ↑ mercury: swordfish, king mackerel, shark
    - n3 = DHA docosahexaenoic acid and
      EPA eicosapentaenoic acid

❖ May/may not ↓ arrhythmia and atrial fibrillation

Fair, Conditional

n3 Fatty Acids in Foods and Heart Health

- **WITHOUT** CHD: n3-rich **PLANT FOODS**
  - Men: 1.6 g…Women: 1.1g per day (AI)
    - ALA (alpha-linoleic acid) in:
      - ❖ Flaxseed, canola, soybean oils; flaxseed, walnuts
        - ➢ ↓ fatal ischemic heart disease and prolonged repolarization
        - ➢ Not related to other non-sudden fatal CVD events or non-fatal MI

Fair, Conditional

n3 Fatty Acids in Foods and Heart Health

- **WITH** CHD: n3-rich **FISH**
  - ≥2 servings/week (3.5 - 4 oz. each)
    - ↓ arrhythmias and fatal heart disease
    - ↓ progression of coronary atherosclerosis

Fair, Conditional

n3 Fatty Acids in Foods and Heart Health

- **WITH** CHD: n3-rich **PLANT FOODS**
  - ↓ cardiac death and non-fatal MI
  - May ↓ recurrence of MI
  - Sources:

Fair, Conditional

n3 Supplements Summary

- Supplementation to be based on status of:
  - CHD
  - Angina
  - Implantable cardioverter defibrillator (ICD)
- **WITHOUT** CHD: no intervention studies
- **WITH** CHD….but no angina, no ICD:
  - 850 mg/day EPA and/or DHA: ↓ sudden death by 45%

Fair, Conditional

n3 Supplements Summary

- **WITH** CHD or angina or ICD:
  - May be contraindicated
- **WITH** ↑ TG and no contraindications:
  - 2-4 g/day under doctor supervision to ↓ TG when >200 mg
  - USDA caution: >3 gm/day may cause GI symptoms

Fair, Conditional

n3 Supplementation

- Evidence does **NOT** support recommending omega-3 (EPA and DHA) supplements for people with diabetes for the prevention or treatment of cardiovascular events.

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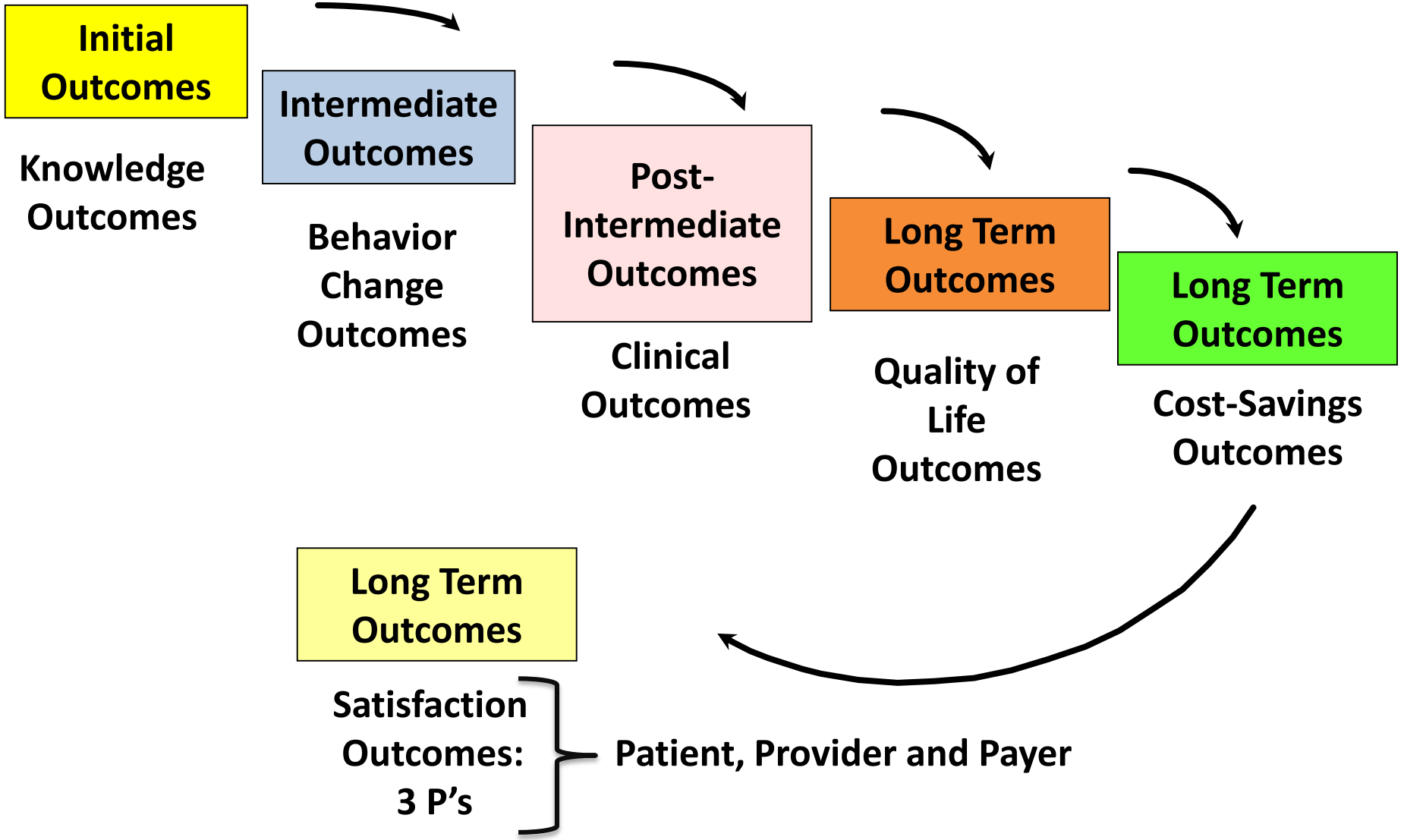
***Diabetes Care* 2015**

Monitoring and Evaluation: 4th Step in Nutrition Care Process

Spectrum of DSME/MNT Patient Outcome Measures



Monitoring and Evaluation

Research reports

sustained improvements

in A1c at

≥1 year with long-term follow-up

encounters with RD.

Monitoring and Evaluation

- RD to monitor and evaluate:
  - Food intake (especially carbohydrate)
  - Medications
  - Weight, BMI, waist circumference, waist-to-hip ratio
  - Physical activity
  - Knowledge and skill outcomes
  - Behavior outcomes
  - Clinical outcomes (A1c, BG, lipids, BP, etc.)
  - Quality of life and health outcomes

Strong, Imperative

SMBG: MDI and Pump Patients

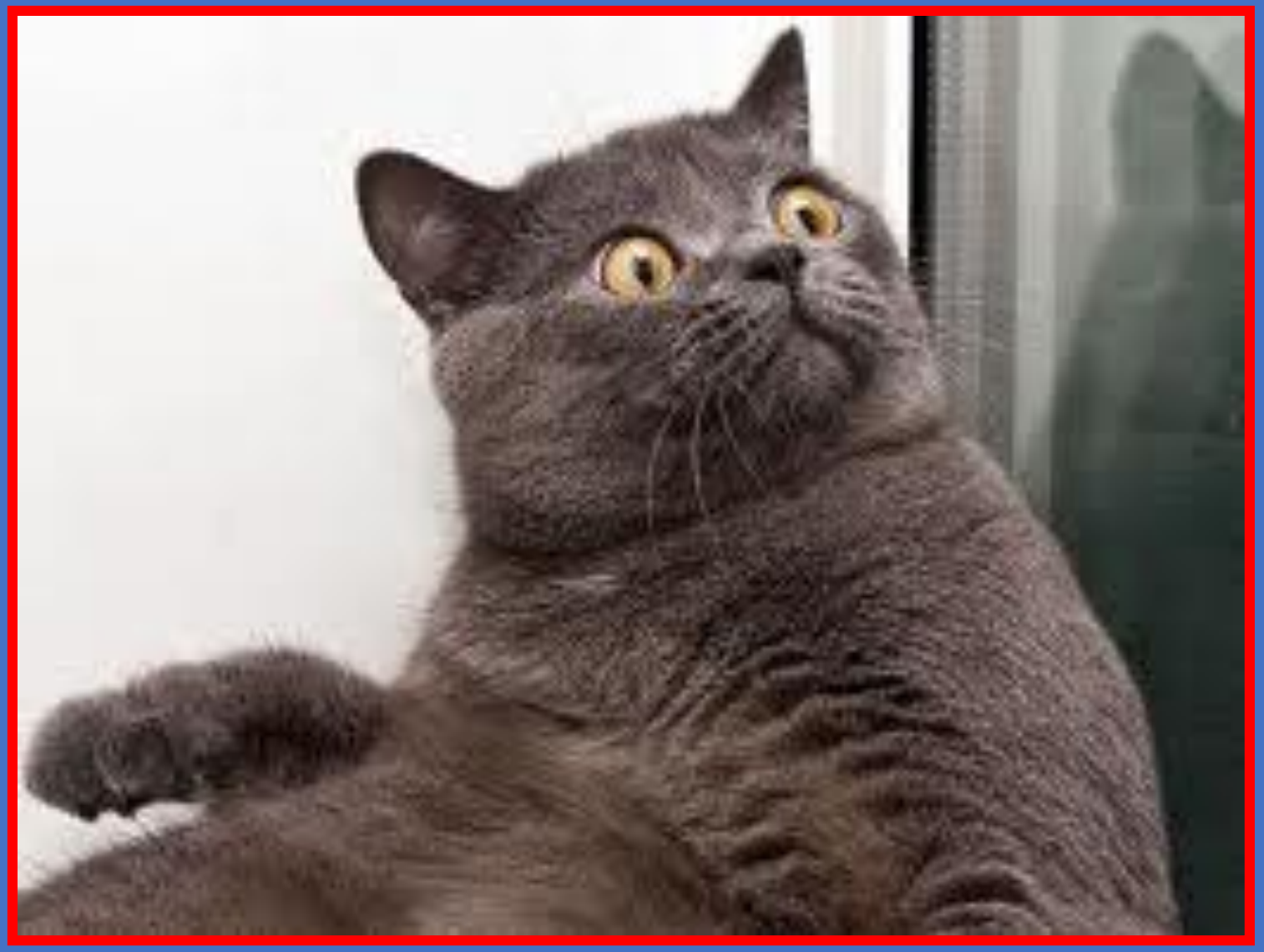
- Multiple-dose insulin (MDI) or insulin pump pts:
  - SMBG prior to meals and snacks
  - Occasionally post-prandially
  - Bedtime
  - Prior to exercise
  - When suspect low BG
  - After treating low BG until normoglycemic, and
  - Before critical tasks (e.g., driving)

Standards of Medical Care in Diabetes, *Diabetes Care* 2015

SMBG: Other Patients with Diabetes

- SMBG results may be helpful to guide treatment decisions and/or patient self-management for patients using less frequent insulin injections or non-insulin therapies.

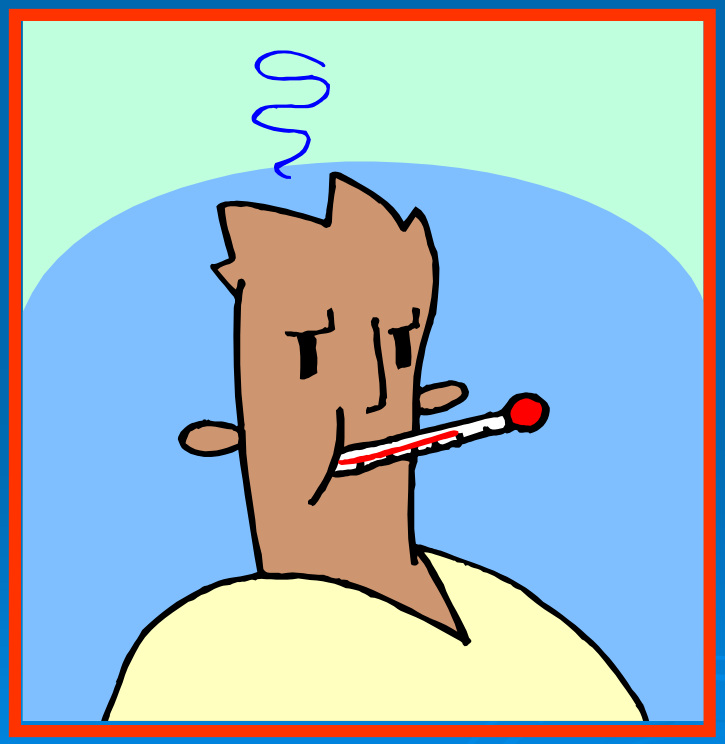
You expect me to remember all this stuff?



I've learned that I must learn the newest methods, processes and technologies, so that both I, and my patients, land on our feet the first time and every time!

BOTTOM LINE:

LIFESTYLE AFFECTS DIABETES!



"Our health always seems much more valuable after we lose it."

~Author Unknown

I'm
sleepy
after
all that info!

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Resources by Mary Ann Hodorowicz

Turn Key Materials for AADE DSME Program Accreditation

- DSME Program Policy & Procedure Manual Consistent with NSDSME (72 pages)
- Medicare, Medicaid and Private Payer Reimbursement
- Electronic and Copy-Ready/Modifiable Forms & Handouts
- Fun 3D Teaching Aids for AADE7 Self-Care Topics
- Complete Business Plan

3-D DSME/T and Diabetes MNT Teaching Aids 'How-To-Make' Kit

- Kit of 24 monographs describing how to make Mary Ann's separate 3-D teaching aids plus fun teaching points, evidence-based guidelines and references

Money Matters in MNT and DSMT: Increasing Reimbursement Success in All Practice Settings, The Complete Guide ©, 5th. Edition, 2015

Establishing a Successful MNT Clinic in Any Practice Setting©

EZ Forms for the Busy RD©: 107 total, on CD-r; Modifiable; MS Word

- Package A: Diabetes and Hyperlipidemia MNT Intervention Forms, 18 Forms
- Package B: Diabetes and Hyperlipidemia MNT Chart Audit Worksheets: 5 Forms
- Package C: MNT Surveys, Referrals, Flyer, Screening, Intake, Analysis and Other Business/Office and Record Keeping Forms: 84 Forms