Medical Nutrition Therapy For Diabetes

Sara Forbes, MS,RD,CDE,BC-ADM
Clinical Dietitian/Diabetes Educator
Ralph H. Johnson VAMC
Charleston, SC
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Learning Objectives

1. Analyze Medical Nutrition Therapy (MNT) as an approach to the non-pharmacological management of diabetes mellitus (DM).
2. Review recommendations for Medical Nutrition Therapy from the American Diabetes Association and Academy of Nutrition and Dietetics.
3. Review strategies to aid patients with diabetes in controlling their BG levels with diet.
4. Recall tips to help create a realistic and individualized nutrition plan for patients.
5. Review the current trends in nutrition affecting counseling.

Diabetes

- Diabetes is a chronic disease that requires a person with diabetes to make a multitude of daily self-management decisions and perform complex care activities.
- Meal planning is the most challenging part of diabetes

Medical Nutrition Therapy (MNT)

- The legal definition of nutritional counseling provided by a Registered Dietitian
  - "Nutritional diagnostic, therapy, and counseling services for the purpose of disease management which are furnished by a registered dietitian or nutritional professional…" (source: Medicare MNT legislation,2000)
- All individuals with diabetes should be offered a referral for individualized MNT provided by a Registered Dietitian (RD)
- MNT delivered by an RD is associated with A1C decreases of 1.0-1.9% for people with Type 1 diabetes and .3-2% for people with Type 2 diabetes
- Many insurance plans cover these services
  - Medicare Part B covers MNT for diabetes and kidney disease

Medical Nutrition Therapy Benefits

- MNT can improve outcomes:
  - Pre-diabetes
    - 58-71% reduction in progression to or preventing diabetes (Diabetes Prevention Program)
  - Diabetes
    - Decrease A1C
    - Decrease LDL cholesterol by 7-22%
    - Decrease Triglycerides by 11-31%
    - Decrease systolic and diastolic blood pressure by an average 5 mmHg
- Growing evidence shows that MNT can result in cost savings

Goals of MNT in Diabetes

- Blood glucose levels
  - Pre-prandial: 80-130mg/dL
  - Peak post-prandial: <180mg/dL
- HgbA1C <7% (for non pregnant adults)
- Optimal serum lipids
  - LDL: <100mg/dL
  - Triglycerides <150mg/dL
  - HDL: Men: >40mg/dL; Women: >50mg/dL
- Blood Pressure: <140/90mm/Hg

Goals of MNT for Adults with Diabetes

- Promote and support healthful eating patterns, emphasizing a variety of nutrient-dense foods in appropriate portion sizes, to improve overall health and:
  - Achieve and maintain body weight goals
  - Attain individualized glycemic, blood pressure, and lipid goals
  - Delay or prevent the complications of diabetes

Goals of MNT continued

- To address individual nutrition needs based on personal and cultural preferences, health literacy and numeracy, access to healthful foods, willingness and ability to make behavioral changes, and barriers to change
- To maintain the pleasure of eating by providing nonjudgmental messages about food choices
- To provide an individual with diabetes the practical tools for developing healthy eating patterns rather than focusing on individual macronutrients, micronutrients, or single foods

MNT Goals for Type 2 Diabetes

- Emphasis on portion control and healthy food choices should be considered for those with type 2 diabetes who:
  - are not taking insulin
  - have limited health literacy or numeracy
  - are older and prone to hypoglycemia

Goals for MNT for Children and Adolescents with type 1 Diabetes

- Individualized MNT is essential component of the overall treatment plan: family habits, food preferences, religious/cultural needs, schedules, physical activity, patient/family's ability of self-management
- Monitoring carbohydrate intake, whether by carbohydrate counting or experienced-based estimation, is key to achieving optimal glycemic control
- Comprehensive nutrition education at diagnosis, with annual updates, by RD is recommended to assess caloric and nutrition intake in relation to weight status and cardiovascular disease risk factor and to inform macronutrient choices

Pre-Diabetes

- Greater than 1 in 3 Americans have Pre-DM
- A1c 5.7% -6.4%
- Fasting blood glucose 100 mg/dL-125 mg/dL
- Recommendations:
  - Weight loss of 5-10% of body weight
  - Lifestyle changes i.e. increased activity of 150 minutes/week
  - Eat a balanced diet including fruits, vegetables, whole grains, protein foods and calcium-rich foods
  - Use of Mediterranean diet, which is high in monounsaturated fats, may be beneficial

Weight Loss and Lifestyle

- Healthy, lower calorie eating patterns
- Weight loss can be attained with lifestyle changes that achieve 500-750 calorie/day energy deficit
  - 1,200-1,500 calories/day for women
  - 1,500-1,800 calories/day for men
- The Quality of fats is more important than the total Quantity of dietary fat
- Benefits seen with as little at 5% weight loss but sustained weight loss of >=7% is optimal
- Various diets used: Mediterranean, DASH, plant-based diet, low carbohydrate

Meal Time and Insulin

- If on flexible insulin therapy program i.e. insulin pump or multiple daily dose
  - Education on how to use carb counting (i.e. Insulin:Carb ratio) and in some cases, how to consider fat and protein content to determine meal time insulin dosing
- If on daily fixed dose
  - Emphasis on a consistent pattern of carbohydrate intake with respect to time and amount may be recommended for improved glycemic control and reduce the risk of hypoglycemia

Medications and Timing of Meals

- Sulfonylureas (glimepiride, glyburide, glipizide): take 30 minutes before meals
- Metformin (Glucophage): take with food or immediately after a meal
- Fast acting insulin: take right before a meal
- Short acting insulin (Regular): take 30 minutes before a meal
- Intermediate-acting insulin (NPH): take 30 minutes before meal or at bedtime
- Long acting insulin: take 30 minutes before evening meal or bedtime
- Premixed insulin: varies depending on insulins used

Carbohydrates (Carbs/CHO)

- RDA recommendation is 45-65% of total calories
- The amount in a diet should be individualized for each patient
- Provides 4 calories per 1 gram carbohydrate
- Digests in 1-2 hours
- 100% of carbohydrate turns to glucose

Carbohydrates

- Monosaccharide
  - "Simple sugar"
  - Consists of one sugar molecule
    - Glucose, fructose, galactose
- Disaccharides
  - "Common sugar"
  - Consist of two sugar molecules
    - Lactose: glucose+glactose
    - Sucrose: glucose+fructose
    - Maltose: glucose+glucose
- Polysaccharides
  - "Complex Carbohydrate"
  - Consist of a chain of monosaccharides joined together
    - Cellulose, starch, glycogen

Protein

- RDA recommendation is 10-35% of calories
- 0.8 gm/kg/day for most adults
- Extra protein is needed for wound healing, critical care, and dialysis patients
- High protein diet is >= 20% of total calories
- Provides 4 calories per 1 gram of protein
- 50% of protein turns to glucose
- In Type 2 DM, protein can increase insulin without increasing blood sugar, so carbs with protein (milk, nuts) is NOT recommended in hypoglycemia treatment

Protein

- Complete proteins= Protein from animal sources
  ex: meat, poultry, fish, eggs, milk, cheese, yogurt
- Incomplete proteins= Protein from vegetable sources
  ex: Plants, grains, nuts, seeds, vegetables
- Rice and beans combined create a complete protein

Fat

- Provides 9 calories per 1 gram fat
- 10% turns to glucose
- Digest in 4-6 hours
- Divided into three groups:
  - Unsaturated Fats
    - Monounsaturated
    - Polyunsaturated
    - Omega-3
  - Saturated Fats
  - Trans Fats

Monounsaturated Fat

- Raises HLD (good cholesterol) levels
- Helps lower LDL (bad cholesterol) levels
- May be liquid at room temp
- Usually from plant sources
  - Olive oil
  - Canola oil
  - Peanut oil
  - Nuts
  - Avocado
  - Olives

Polyunsaturated Fat

- Lower all cholesterol levels (HDL and LDL)
- From plant sources, may be liquid at room temperature
  - Safflower oil
  - Sunflower oil
  - Soybean oil
  - Corn oil
  - Vegetable oil
  - Tub margarine
  - Mayonnaise
  - Salad dressings

Omega-3 Fatty Acids

- Consuming 2 4-ounce servings of seafood/week may reduce risk of heart disease and related deaths
- Consuming may lower the levels of triglycerides
- Sources:
  - Mackerel, herring, salmon, sardines, trout
  - Flaxseed oil, walnut oil, canola oil, soybean oil
  - Walnuts, edamame, chia seeds

Saturated Fat

- No required role in the body other than energy source
- Raises LDL (bad) cholesterol levels
- Solid at room temperature
- Animal fats: meat fat, butter, lard, whole milk products, chicken/turkey skins, chitterlings
- Vegetable fats: palm and palm kernel oils, coconut oil, coconut, cocoa butter

Trans Fat

- Liquid at room temperature and are hydrogenated/partially hydrogenated to make solid at room temperature
- Provides longer shelf life
- Raises LDL (bad) cholesterol
- Lowers HDL (good) cholesterol

- Sources include vegetable shortening, stick margarine, packaged snack foods (crackers, etc.), commercially baked pastries, cookies, doughnuts, cakes, muffins, pizza dough, pie crust

Fiber

- Non-digestible carbohydrate
- Average daily intake: 10-30 gms/day
- Recommended 20-35 gms/day
- High fiber (25-35 gms/day) reduces risk of CVD
- Soluble fiber: forms a gel in water, slows absorption of nutrients, lowers cholesterol
  - Beans, fruit, oat bran, rice bran, barley
- Insoluble fiber: does not dissolve in water but absorbs water, helps treat constipation
  - Wheat bran, whole grains, root vegetables

Sodium/Salt

- Limit to <2,300 mg/day
- Restriction <1,500mg,even w/HTN, is not recommended
- Recommendations should take into account palatability, availability, affordability, and the difficulty of achieving low-sodium recommendations in a nutritionally adequate diet
- Salt is Salt

Alcohol

- Bypasses the pancreas to be metabolized in the liver
- Hypoglycemia is possible
  - To reduce risk of hypoglycemia
    - Eat food when consuming alcohol
    - Check BG levels frequently
- If on oral agents, may cause nausea, vomiting
- Carbs ingested with alcohol (mixers) may influence BG levels
- Moderation: 1 drink/day women, 2 drinks/day men
  - 5 oz. wine
  - 1.5 oz. distilled spirits
  - 12 oz. beer

Nutritive Sweeteners

- Recommendation from ADA:
  - Limit/avoid any caloric sweetener
- Contain calories and carbs
- Fructose
  - Produce glycemic response, but less than sucrose and starch
- Sugar Alcohols
  - Sorbitol, Mannitol, Xylitol
  - Have lower glucose response than sucrose or glucose
  - Consuming >10 mg/day may cause diarrhea
- Agave nectar, maple syrup, sucrose, honey
  - 1 Tbsp. contains 15 gm Carbohydrate

Non-nutritive Sweeteners

- Low or no calories
- FDA approved but moderation is recommended
- Use has ability to reduce calories and carbohydrate intake if substituted for caloric sweeteners
- May be used as short-term replacement strategy, but
  - overall, people are encouraged to decrease both sweetened and nonnutritive-sweetened beverages and use other alternatives, with an emphasis on water intake

	Saccharin (Pink Pack)	Aspartame (Blue Pack)	Sucralose (Yellow Pack)	Stevia (Green Pack)
Acceptable Daily Intake (ADI)	5 mg/kg wt	50 mg/kg wt	5 mg/kg wt	4 mg/kg wt steviol equivalents
ADI 150 lb. adult	68 kg x 5 mg/kg= 340 mg	68 kg x 50 mg/kg= 3409 mg	68 kg x 5 mg/kg= 340 mg	68 kg x 4 mg/kg= 272 mg
mg per pack	36 mg	37 mg	12 mg	
ADI packs/day	9-10 packs	92 packs	28 packs	9 packs
Brand names	Sweet'N Low, Sweet Twin, Necta Sweet *not recommended: in pregnancy	Nutrasweet, Equal, Sugar Twin	Splenda	Truvia, PureVia, Enliten, Zing *Herb in Chrysanthemum

Micronutrients and Supplements

- No clear evidence of benefit from herbal or nonherbal (vitamin or mineral) supplementation for people with diabetes without underlying deficiencies
- However, in special populations including pregnant or lactating women, older adults, vegetarians, and people following very low carb or calorie diets, a multivitamin may be necessary

Supplements

Vitamin B12

- Metformin is associated with vitamin B12 deficiency
- It is suggested that periodic testing of vitamin B12 levels should be considered, particularly in those with anemia and peripheral neuropathy

Antioxidants

- Vitamins E and C and carotene
- Not advised due to lack of evidence of efficacy and concern for long-term safety

Cinnamon, Curcumin, Vitamin D, Chromium, Aloe Vera

Insufficient evidence to support the routine use of the above or any vitamins, minerals, herbs, or spices to improve glycemia in people with diabetes

Glycemic Index (GI)

- Speed of rise in blood sugar after eating a particular food—measures CHO quality
- Ranks carbohydrate foods according to their effect on blood glucose levels
  - High GI foods raise blood glucose levels
  - Low GI foods have less of an effect
- Food items high in fiber will have a lower GI
- Example:

  36 gm of CHO vs 33 gm CHO

  1 cup white rice= GI 64
  1 cup brown rice=GI 55

Glycemic Load (GL)

- Grams of carbohydrate in the food x the food's GI)/ 100
- Helps relate Glycemic Index to actual food servings or quantity
- Example:
- 1 cup white rice
  - 64 GI x 36 gm CHO/100=GL of 23

- 1 cup brown rice
  - 55 GI x 33 gm CHO/100=GL of 18

Factors that Effect Glycemic Index/Glycemic Load

- Physical form/particle size
  More processed foods have higher GIs
  Pureed foods and juices have higher GIs
- Food Combinations
  GI changes if carbohydrate is part of meal or alone
- Differs from person to person

Metabolic Surgery

- Achieves superior glycemic control and reduction of cardiovascular risk factors in obese patients with type 2 diabetes compared to various lifestyle/medical interventions
- Does not "cure" diabetes
- Postop follow up trials ranging from 1-5 years have documented sustained diabetes remission in 30-63% of patients
- Long-term lifestyle support and routine monitoring of micronutrient and nutritional status must be provided after surgery

Metabolic Surgery

- Should be recommended as option to treat type 2 diabetes in appropriate surgical candidates
  - BMI>=40 kg/m2 (BMI>=37.5 kg/m2 in Asian Americans), regardless of level of glycemic control or complexity of glucose-lowering regimens
  - BMI 35.0-39.9 kg/m2 (32.5-37.4 kg/m2 in Asian Americans) when hyperglycemia is inadequately controlled despite lifestyle and optimal medical therapy
- More recently indicated for patients with patients with type 2 diabetes and BMI as low as 30 kg/m2 (27.5 kg/m2 for Asian Americans) who do not achieve durable weight loss and improvement in comorbidities (including hyperglycemia) with reasonable nonsurgical methods

Metabolic Surgery for Adolescents with type 2 Diabetes

- Those with BMI>35 with comorbidities
- Those with BMI>40 with or without comorbidities

Gestational Diabetes (GDM)

- The food plan should provide
  - adequate calorie intake to promote fetal/neonatal and maternal health
  - achieve glycemic goals
  - promote appropriate gestational weight gain
- There is no definitive research that identifies a specific optimal calorie intake for women with GDM or suggests that their calorie needs are different from those of pregnant women without GDM
- Minimum 175 gms carbohydrate, 71 gms protein, 28 gms of fiber
- 3 meals and 2-4 snacks
- Carbohydrate usually broken down to 30 gms breakfast, 60 gms at lunch, 60 gms at supper, 15-30 gms carb at snacks

Diabetes and Pregnancy in Special Population

- Women with type 1 diabetes have an increased risk of hypoglycemia in the first trimester and, like all women, have altered counterregulatory response in pregnancy that may decrease hypoglycemia awareness.
  - Education for hypoglycemia prevention and treatment for patients is key
- Women with type 2 diabetes have a recommended weight gain during pregnancy of the following:
  - Overweight women 15–25 lb.
  - Obese women 10–20 lb.

Hypertension and Diabetes

- Restrict sodium intake <2,300 mg/day
- Reduce excess body weight through caloric restriction
- Increase fruit and vegetable intake (8-10 servings/day) and low fat dairy products (2-3 servings/day) (DASH diet)
- Avoid excessive alcohol consumption (no more than 2 servings/day for men and 1 serving/day for women)
- Increase activity level
- Recommendations for dietary sodium and potassium intake should be individualized on basis of medication use, comorbid conditions, blood pressure, lab data

Kidney Disease

- Dietary protein intake should be .8 gm/kg body weight/day
- Higher levels (>1.3gm/kg/day) have been associated with increased albuminuria, more rapid kidney function loss, and CVD mortality and should be avoided in those with nondialysis-dependent kidney disease
- Reduced levels of protein below the recommended daily allowance does not alter glycemic measures, cardiovascular risk measures, or the rate at which glomerular filtration rate declines, thus are not recommended

Lipid Management and Diabetes

- Weight loss if indicated
- Use of Mediterranean diet or DASH diet
- Reduction of saturated fat and trans fat
- Increase intake of plant stanols/sterols and viscous fiber (oats, legumes, and citrus

Special Considerations

Gastoparesis

- Slow emptying gut
- Low fiber (<2 gms fiber/serving)
- No raw fruits/vegetables
- Low fat solid food
- High fat liquids are tolerated i.e. milkshakes if consuming liquids
- 5-6 small frequent feedings

Special Considerations

Celiac Disease

- Gluten free diet
- No wheat, rye, barley, oats
  - Example: no flours, pasta, crackers, bread, cereals, snack foods made with the above
- Auto-immune disease so all Type 1's should be tested
- Be aware of nutritional deficiencies and anemia
- Cross-contamination can be an issue

Sick Days

- Try to eat normally
  - Try to consume same number of grams of carbohydrate at meal time, whether it be soft or solid foods or liquids
- If unable to eat and glucose is less than 240 mg/dL
  - Sip on liquids that DO contain sugar so to prevent hypoglycemia and dehydration
    - 15 grams carb: ½ cup juice,1/2 cup regular soda,1/2 cup regular jello, 1 cup thin soup
  - Small sips every 5-15 minutes
- If vomiting or diarrhea
  - Replace sodium and potassium losses

    Na+: Gatorade, broth, bouillon

    K+: Gatorade, tomato, grapefruit, or orange juice

Hypoglycemia

- BG levels less than 70mg/dL (60mg/dL in pregnant)
  - Take 15gm of **FAST** CHO
    - Take four Dex4 glucose tablets (16gm CHO)
    - ½ can of regular soda
    - ½ cup of juice
    - 1 TBSP of sugar (3 sugar packets)
    - *Avoid anything containing fat- Milk (even skim milk, peanut butter cookies/sandwich, candy bar)
  - Wait 15 minutes and retest BG level
  - If BG level is still less than 70mg/dL then repeat and follow with a meal or snack that contains protein (1/2 turkey sandwich, ½ peanut butter sandwich, 3 peanut butter cracker sandwiches)

Types of Meal Planning

- All meal plans should be **Individualized**

Plate Method

- Provides visual guide by showing how to control:
  - calories by featuring a smaller plate
  - carbohydrates by limiting them to what fits in ¼ of plate
- Puts emphasis on low-carbohydrate (or non-starchy) vegetables

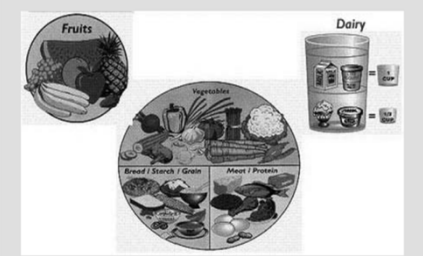

Figure 1: The original healthy diabetes plate

Carbohydrate (CHO) Counting

- One serving = 15 gms of carbohydrate
- Carbohydrates are found in 3 food groups:
  - Starch/Sweets
  - Fruit
  - Milk
- Sugar free is NOT carbohydrate free or calorie free
- Typical recommended intake is 180-200 gms/day
  - Broken down into consistent CHO intake daily
  - 45 gms at Breakfast, 45-60 gms at Lunch, 45-60 gms at Supper
  - 15 gms for snacks (optional)

Starches/Sweets

- 80 calories
- 15 gms carbohydrate
  - 1/3 cup cooked rice/pasta (brown or white)
  - ½ cup cooked cereal
  - ½ cup starchy vegetables (beans, peas, corn, potatoes)
  - 1 slice bread (white or wheat)
  - ½ hamburger bun, hot dog bun, English muffin
  - 1 tortilla-6" across
  - 5-6 crackers
  - 12-15 chips
  - 2 Oreos
  - 2" square unfrosted brownie/cake

Fruit Choices

- 60 calories
- 15 gm of carbohydrate
  - 1 medium fruit (baseball sized)-apple, orange, pear, peach
  - ½ banana 9"
  - 1 cup fresh fruit (berries, melons, grapes)
  - ½ cup juice
  - ½ cup canned fruit (no heavy syrup)
  - ¼ cup dried fruit
  - 1 Tbsp. jelly

Milk

- 80-120 calories
- 12-15 gms of carbohydrate
  - 1 cup (8 oz..) milk
  - 6-8 oz. yogurt (plain or artificially sweetened)
  - 3-4 oz. sweet yogurt
  - 12 oz. almond milk
  - 12 oz. soy milk

Vegetables

5 grams carbohydrate

½ cup cooked

1 cup raw

Free Foods

- Less than 20 calories and 5 grams of carbohydrate per serving
  - Limit to 3 servings per day
  - Servings should be spread out

- Examples:

Water	Crystal Light products
Diet Soda	Sugar-free Jell-O
Plain tea/coffee	Herbs/spices
Sugar-free popsicles	Lemon
Sugar-free Kool-Aid	Mustard

Other Common Diets

Acceptable

- Mediterranean
- Dietary Approaches to Stop Hypertension (DASH)
- Plant-based diets
  - Vegetarian
  - Vegan

Fad

- Keto: low carb (<40gms carb/day, high fat)
- Atkins
- Paleo
- Gluten-free
- Whole 30
- 21 Day Fix

Claims of Food Labels

- Fat free: 0.5 gm or less of fat per serving
- Trans fat-free: 0.5gm or less of trans fat per serving
- Low fat: 3 gm or less of fat per serving
- Calorie free: 5 calories or less per serving
- Light/Lite: ½ fewer calories or 50% less sugar, salt, or fat than regular product
- Low sodium/salt: 140 mg or less sodium per serving
- Reduced: 25% less per serving than original
- Sugar free: 0.5 gm or less of sugar per serving
- No sugar added: no sugar added during the processing

Sugar-Free Is NOT Calorie Free

- Sugar-free Pudding Pack

CALORIE CONTENT HAS BEEN REDUCED FROM 120 TO 70 PER SERVING.

Nutrition Facts

Serving Size 1 pudding cup (99g)
Servings Per Container 4

Amount Per Serving	
Calories 70	Calories from Fat 30
	% Daily Value*
Total Fat 3.5g	5%
Saturated Fat 2g	10%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 110mg	5%
Total Carbohydrate 15g	5%
Dietary Fiber 1g	5%
Sugars 0g	
Sugar Alcohol 9g	
Protein less than 1g	

- Regular Pudding Pack

Nutrition Facts

Serving Size: 1 snack (113g)

Amount Per Serving	
Calories 100	Calories from Fat 0
	% Daily Value*
Total Fat 0 g	0%
Saturated Fat 0 g	0%
Trans Fat 0 g	
Cholesterol 0 mg	0%
Sodium 210 mg	9%
Potassium	
Total Carbohydrate 24 g	8%
Dietary Fiber 0 g	0%
Sugars 17 g	
Sugar Alcohols	
Protein 1 g	

Trends in Teaching MNT

- Motivational Interviewing
  - Patient-centered method for enhancing intrinsic motivation to change by exploring and resolving ambivalence
  - The provider listens to the patient's perspective on how the problem affects daily life and seeks to understand the patient's point of view without judging or criticizing the behavior
- Mindfulness Eating
  - Concept of being present in the moment
  - Being aware of the nourishment available through the process of food preparation and consumption, choosing enjoyable and nutritious foods, acknowledging food preferences nonjudgmentally, recognizing and honoring physical hunger and satiety cues, and using wisdom to guide eating decisions.

Nutrition Apps

- MyFitnessPal
- mySugr
- CalorieKing
- MyNetDiary
- CarbManager
- HEALTHeDiabetes
- Glucose Buddy
- GoMeals
- Carbs to Go!

Food Insecurity

- Major obstacle to dietary management
- Fruits and vegetables are more expensive
- Can lead to missed meals or relatively less expensive simple carb dense meals that can potentially exacerbate poor glycemic control and lead to high risk of complications
- Nutrition intervention should focus on consuming more produce within local socioeconomic limits

References

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Question

How many carbs are in the following meal?

- 3 oz. pork chop
- 1 cup rice
- 1 cup green beans
- 1 tsp margarine (for rice)
- 8 oz. ice tea with Splenda

Answer

3 oz. pork chop	0 grams carb→ in the meat group
1 cup rice	45 grams carb→ 1/3 cup=15 grams
1 cup green beans	10 grams carb→ 1/2 cup cooked=5 grams
1 tsp margarine	0 grams carb→ in the fat group
8 oz. ice tea with Splenda	0 grams carb→ free food
	55 grams carb

Question

- Which of the following meals would not be acceptable for a person with Celiac Disease:

1. Fried chicken, mashed potatoes, green beans
2. Roast beef, rice and gravy, broccoli
3. Baked fish, grits, okra and tomatoes

Answer

- Baked fish, grits, okra and tomatoes

- Fried chicken, mashed potatoes, green bean→ the chicken has a crust made out of flour
- Roast beef, rice and gravy, broccoli→ the gravy has flour as a thickener (unless one knows it was made w/corn starch)

Questions:

- Which of the following is not a non-starchy vegetable?

1. Corn
2. Zucchini
3. Green beans

Answer

Corn is a starch

It confuses a lot of people along with green peas being a starch also