The **Nutrition Front-Runners: The evidence behind meal planning methods for diabetes**

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Faculty Disclosure

• Sanofi – speakers bureau
• American Diabetes Association – ERP auditor
Need/Practice Gap & Supporting Resources

With over 30 million people with diabetes in the US, behavior change is the one way that there will be an improvement in diabetes self-care. Meal planning can aid in reducing the A1C by 1-2%. In order to empower all healthcare professionals who come in contact with people with diabetes, it is crucial that the same meal planning messages are given out regardless of discipline.

Objectives

• List at least three of the current meal plan methods used for diabetes and their benefits
• Explain the current research that supports the claims of the current meal plan methods for diabetes
• Describe the uses of the Mediterranean Diet, the research behind it and practical methods to use with people with diabetes
• Identify at least two reputable and up-to-date sources of nutrition information for health care professionals
Expected Outcome

• Increased knowledge of current meal plan methods used for diabetes and their benefits
• Increased knowledge of current research that supports the claims of the current meal plan methods for diabetes
• Knowledge of the uses of the Mediterranean Diet, the research behind it and practical methods to use with people with diabetes
• Identification and use of reputable and up-to-date sources of nutrition information for health care professionals
What are the key recommendations for meal planning for diabetes?

A. reducing carbohydrate
B. reducing fat
C. increasing protein
D. eliminating regular soft drinks
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B. reducing fat
C. increasing protein
D. eliminating regular soft drinks
How do Americans eat?

• STILL too many:
  – **CALORIES**

• Too much:
  – Solid fat
  – Added sugars
  – Refined grains
  – Sodium

• Too little:
  – Potassium
  – Dietary fiber
  – Calcium
  – Vitamin D
  – Unsaturated fat from nuts, oils, seafood
Dietary Intakes Compared to Recommendations
How the American Diet Has Changed since 1970

Average annual per capita availability, in pounds

We’re eating less ...

- Potatoes
- Refined cane and beet sugar
- Beef
- Eggs
- Milk
- Full-fat ice cream
- Margarine

and more ...

- Chicken
- Cooking oils
- Corn sweeteners
- Corn products
- Cheese
- Rice
- Yogurt

'70 '14
The Average American Eats Too Little:

A. Vegetables
B. Fruit
C. Dairy
D. Oils
E. All of the Above
The Average American Eats Too Little:

A. Vegetables
B. Fruit
C. Dairy
D. Oils
E. All of the Above
Meal plans and health – the evidence

- **Alignment of Healthy Dietary Patterns and Environmental Sustainability: A Systematic Review, Adv Nutr, 2016**
  - Across studies, consistent evidence indicated that a dietary pattern higher in plant-based foods (veg, fruit, legumes, seeds, nuts, whole grains) and lower in animal-based foods (esp red meat) as well as lower in total calories, is both HEALTHIER and associated with LESSER IMPACT on environment
  - Following diets that are vegetarian, dietary guidelines-related, Mediterranean, DASH promotes greater health

- **Trending Cardiovascular Nutrition Controversies, JACC, 2017**
  - Review of popular dietary patterns and foods
  - Bottom line: evidence supports the use of olive oil, blueberries/strawberries, nuts, green leafy veg, plant-based proteins
  - Inconclusive evidence: coconut oil, antioxidant supplements, juicing, gluten-free foods in the absence of celiac disease
  - Eating pattern evidence: DGA, Mediterranean, DASH, Vegetarian
Meal plans and health

• Recommended Dietary Pattern to Achieve Adherence to the AHA/ACC Guidelines, A Scientific Statement, Circulation, 2016
  – Summarizes evidence, offers practical tips, tools and dietary approaches to help people adapt the guidelines
  – There are many options for successful adaptation of any one of the recommended dietary patterns that in general advocate emphasis on veg, fruit, whole grains; include low-fat dairy, poultry, fish, legumes, nontropical veg oils, and nuts; and limit intake of sweets, SSB, red meats, and processed foods.
  – DASH
  – Mediterranean
  – Vegetarian
Meal timing and Frequency

- AHA Scientific Statement, 2017
- Skipping meal and breakfast has become more prevalent
- **Breakfast**
  - Association between skipping breakfast and low nutritional adequacy
  - May not affect weight as much as we think, but it does improve eating habits
- **Intermittent Fasting**
  - Alternate-day vs periodic (1-2 d/wk)
  - Short-term weight loss – question sustainability
- **Meal frequency**
  - Unless you are altering calorie intake, the # of meals eaten is not useful
  - Increased frequency MUST be associated with calorie focus to avoid overeating
- **Meal timing**
  - Late night eating associated with greater risk of weight gain
  - Late night eating plus skipped breakfast had greater risk of obesity, MetS
  - Eating majority of total calories earlier in the day may reduce risk of DM
  - Irregular patterns tend to have an adverse effect
### Intentional Approach to Eating – AHA Recommendations

Develop an intentional approach to eating that focuses on the timing and frequency of meals and snacks as the basis of a healthier lifestyle and improved risk factor management.

- Understand the patient’s frame of reference in how he or she may define meals and snacks.
- Recommend distributing calories over a defined portion of the day.
- Recommend eating a greater share of the total calorie intake earlier in the day to have positive effects on risk factors for heart disease and diabetes.
- Promote consistent overnight fast periods.
- Link eating episodes to influence subsequent energy intake (if longer period time between any meal, place a snack prior to it in order to reduce overeating).
- Include intermittent fasting approaches as an option to help lower calorie intake and to reduce body weight.
- Use added eating episodes to introduce a wider variety of healthful food options and to displace less healthful foods.
- Use planned meals and snacks throughout the day to help manage hunger and to achieve portion control.
Effect of Current Dietary Recommendations on Weight Loss and Cardiovascular Risk Factors

• **JACC, 2017**
• 919 overweight Canadian men and women
• Randomized to of of the following interventions:
  – Health Canada’s food guide
  – Dietary advice consistent with DASH and dietary portfolio principles
  – Weekly food provision following the above guidelines
  – Food delivery plus above meal planning advice
• Provision of foods provided increased retention
• The data demonstrated the difficulty in effectively promoting fruit, vegetable, and whole grains in the general public
• Suggestions:
  – Success of dietary advice may be influenced by perception of immediate benefit
  – Further emphasis needed on the long term advantages of maintaining a healthier meal plan
  – More emphasis placed on overcoming barriers, esp to food preparation
  – Use multiple forms of communication to make healthier shifts in diet
Food groups and risk of all-cause mortality

- Systematic review and meta-analysis – n=103
  - Focused on 12 major food groups
    - Whole grains
    - Refined grains
    - Vegetables
    - Fruits
    - Nuts
    - Legumes
    - Eggs
    - Dairy
    - Fish
    - Red meat
    - Processed meat
    - Sugar-sweetened beverages
  - Increasing intake of whole grains, veg, fruits, nuts, fish reduced the risk of all-cause mortality
  - Higher intake of red meat and processed meat increased risk of all-cause mortality
  - Optimal consumption of risk-reducing foods results in a 56% reduction of all-cause mortality (at least 3 svg/d of fruit, veg, whole grains each; 2 svg fish/d; 1 svg of legumes and nuts/d)
Association Between Dietary Factors and Mortality From Heart Disease, Stroke, and Type 2 Diabetes in the US

- JAMA, 2017
- NHANES review – 1999-2012
- Consumption of 10 foods/nutrients associated with cardiometabolic diseases:
  - Fruits
  - Veg
  - Nuts/seeds
  - Whole grains
  - Unprocessed red meats
  - Processed meats
  - Sugar-sweetened beverages
  - Polyunsaturated fats
  - Seafood omega-3 fats
  - Sodium
Which dietary factors are associated with risk of death from CHD, stroke, T2D?

- Largest numbers of diet-related deaths related to:
  - High sodium
  - Low nuts/seeds
  - High processed meats
  - Low seafood omega-3 fats
  - Low vegetables
  - Low fruits
  - High sugar-sweetened beverages
  - Low whole grains
Meal plans and diabetes

- Dietary patterns and type 2 diabetes: a systematic literature review and meta-analysis of prospective studies, 2017 (J Nutrition)
  - Adherence to Mediterranean diet, DASH was associated with risk reduction
  - Patterns that included processed meat, refined grains, high-fat dairy, eggs, sugar-sweetened beverages and fried products were positively associated with DM
  - Patterns including vegetables, legumes, fruits, poultry and fish were inversely associated with DM
Meal plans and diabetes

• Systematic review and meta-analysis of different dietary approaches to the management of type 2 diabetes, 2013 (Am J Clin Nutr)
  – Low-carbohydrate, low-GI, Mediterranean and high-protein diets are effective in improving various markers of cardiovascular risk in people with diabetes and should be considered in the overall strategy of diabetes management
    • There was a significant decrease in A1C with low carb diet, low GI, Mediterranean and high-protein
    • Mediterranean had weight loss benefit
    • HDL increases with low-GI, low-carb
    • Mediterranean reduced triglycerides
Meal planning and diabetes

• Nutrition therapy recommendations for the management of adults with diabetes, 2013 (Diabetes Care)
• 2017 Standards of Medical Care -- Foundations of Care
  – Evidence suggests there is not an ideal percentage of calories from carbohydrate, protein and fat for all people with diabetes.
  – Macronutrient distribution should be based on individualized assessment of current eating patterns, preferences, and metabolic goals.
  – A variety of eating patterns are acceptable for the management of diabetes. Personal preferences (tradition, culture, religion, health beliefs and goals, economics) and metabolic goals should be considered when recommending one eating pattern over another.
  – Substituting low-glycemic load foods for higher-glycemic load foods may modestly improve glycemic control.
Dietary Guidelines for Americans (DGA)
More than a third know at least a fair amount about the MyPlate graphic, although familiarity is down slightly from 2015.

How familiar are you, if at all, with the following graphic?

- I have seen it and know a lot about it: 10% in 2016, 12% in 2015
- I have seen it and know a fair amount about it: 27% in 2016, 30% in 2015
- I have seen it, but know very little about it: 22% in 2016, 21% in 2015
- I have never seen it before: 35% in 2016, 32% in 2015
- Not sure: 6% in 2016, 4% in 2015

2016 n=1,003; 2015 n=1,007
Arrows indicate significant (.05 level) differences vs. 2015
Dietary Guidelines 2015-2020

- Follow a healthy eating pattern across the lifespan
- Focus on variety, nutrient density and amount.
- Limit calories from added sugars and saturated fats and reduce sodium intake
- Shift to healthier food and beverage choices
- Support healthy eating patterns for all.
DGA 2015

• Common elements of healthy eating patterns
  – Increased **fruits**
  – Increased **vegetables**
  – Many emphasize **whole grains**
  – Moderate amounts and a variety of foods high in protein
  – Limited amounts of foods high in added sugars
  – May include **more oils** than solid fats
  – Low in full-fat milk and dairy products
  – Wine is included at meals in some patterns
  – Higher unsaturated to saturated fatty acid ratio
  – Higher dietary fiber
  – Higher potassium
  – Lower in sodium
The best meal patterns follow includes:

A. Reducing carbohydrates
B. Eating very low fat
C. Eliminating all sugars
D. A variety of foods
The best meal patterns follow includes:

A. Reducing carbohydrates
B. Eating very low fat
C. Eliminating all sugars
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DASH diet

• This plan recommends:
• Eating vegetables, fruits, and whole grains
• Including fat-free or low-fat dairy products, fish, poultry, beans, nuts, and vegetable oils
• Limiting foods that are high in saturated fat, such as fatty meats, full-fat dairy products, and tropical oils such as coconut, palm kernel, and palm oils
• Limiting sugar-sweetened beverages and sweets.
• Limit alcohol
• Limiting added sodium -- <2300 mg/d
DASH Diet – the evidence

• 20th anniversary of the landmark NEJM article showing its BP lowering effects
• Benefit for HTN is widely accepted
  – Adv Nutr 2016
    • Systematic Review – Dietary Patterns and BP in Adults
  – Br J Nutr, 2015 – review
    • Effective strategy to reduce CV risk
• DM and metabolic syndrome/pre-diabetes
  – J Clin HTN, 2017
    • DASH+ walking in adults with T2D and HTN
    • Improved BP, but weight change was not significant
  – Obesity Rev, 2016
    • Good choice for weight mgmt
Why hasn’t the DASH diet caught on?

- *Apr 4, 2017 -- Washington Post commentary*
- **Speculation:** if people are left to their own devices, they typically do not realize the resources available
- While the guide is very helpful, it DOES require explanation by a professional initially AND on an ongoing basis
- For DASH to work, patients will need guidance
DASH resources

- Wide variety of recipes
- Getting started guide
- Larger PDF guide on NHLBI website
Mediterranean Diet -- diversities
Mediterranean Diet

• An eating pattern practiced by 18 countries that border the Mediterranean Sea

• Mediterranean Diet Pyramid created in 1993 by Oldways, Harvard School of Public Health, and the European Office of the WHO

• Meal plan components:
  – Increased fruits and vegetables, nuts/seeds, legumes, whole grains, olive oil, fish twice weekly
  – Increase fresh/locally grown food, increased herbs and spices
  – Minimize processed foods
  – Moderate intake of poultry, cheese, yogurt, eggs (<7/week), red wine
  – Reduced red meat (12-16 oz/month)
  – Decreased added sugar and saturated fat
Mediterranean Diet Pyramid

- **Every Day:** Base Each Meal Around these Foods
  - Vegetables, Fruits, Whole Wheat Grains, Olive Oil, Beans, Nuts, Legumes and Seeds, Herbs and Spices

- **Weekly:** Moderate Portions
  - Poultry, Eggs, Cheese and Yogurt

- **Less Often:** Meats and Sweets

- **In Moderation:** Wine

- **Every Day:** Water

- **Every Day:** Be Physically Active; Enjoy Meals with Others

Illustration by George McManus © 2009 Oldways Preservation and Exchange Trust • www.oldwayspt.org

http://oldwayspt.org/mediterranean-diet-pyramid
Pirámide de la Dieta Mediterránea: un estilo de vida actual

Guía para la población adulta

Medida de la ración basada en la frugalidad y hábitos locales

Vino con moderación y respetando las costumbres

Dulces ≤ 2r

Carne roja < 2r
Carnes procesadas ≤ 1r

Huevos 2-4r
Legumbres ≥ 2r

Carne blanca 2r
Pescado / Marisco ≥ 2r

Hierbas / Especies / Ajo / Cebolla (menos sal añadida)
Variedad de aromas

Aceite de oliva
Pan / Pasta / Arroz / Cuscús / Otros cereales 1-2r
(preferir integrales)

Frutas 1-2 / Verduras ≥ 2r
Variedad de colores / texturas (Cocidas / Crudas)

Agua e infusiones de hierbas

Biodiversidad y estacionalidad
Productos tradicionales, locales y respetuosos con el medio ambiente
Actividades culinarias

Actividad física diaria
Descanso adecuado
Convivencia

Edición 2010

r = Ración
Med Diet – the evidence

• PREDIMED (http://www.predimed.es/publications.html -- 206 through 2016)
  – Ann Intern Med, 2006
    • 1st published paper re: PREDIMED
    • Short term effects of Med Diet vs low fat – 3 months
    • Med Diet with nuts and olives had beneficial effects on CV risk factors (LDL, BP, glucose)
  – NEJM, 2013
    • Primary prevention of CVD with Med Diet
    • 7447 participants randomized to Med Diet or low fat – 4.8 years
    • Med Diet with nuts and olive oil reduced CVD risk
  – The Lancet, Diabetes and Endo, 2016
    • 5 year trial, 11 hospitals in Spain
    • Comparing Med diet with olive oil, Med diet with nuts or low fat diet
    • unrestricted-calorie, high-vegetable-fat Med diet associated with:
      – decreases in body weight
      – less gain in central adiposity

• Med Diet and wt loss
  – Am J Med, 2016 – systematic review
    • Med diet showed similar wt loss as low-carb, low fat ADA recs
Med Diet – the evidence

• Adherence based on cultural differences
    • Shift to a more westernized version of Med Diet since 50s and 60s but if still followed basic principles, it had a protective effect
    • Larger dairy food consumption
    • Did not have a negative impact in conjunction with Med Diet properties
    • Adherence to Med Diet with increased dairy had an inverse effect on mortality
  – BMC Medicine, 2016 – Med Diet in non-Med population
    • UK-based EPIC-Norfolk study -- >23,000 participants followed for >12 years
    • Greater adherence to the Mediterranean diet was associated with lower CVD incidence and mortality
  – Curr Opin Clin Nutr Metab Care 2016 – Specific foods vs the diet concept
    • The adequate transferability of the Med Diet to non-Mediterranean countries requires us to incorporate olive oil as the main source of fat
Med Diet – the evidence

- Nutr Res Reviews, 2016
  - Med Diet components can prevent metabolic syndrome
  - Med Diet and DASH reduces risk of obesity, T2D, CV Dz, Asthma, Mental Health
  - 3,397 women with h/o GDM followed for up to 20 years
  - Those who followed Med Diet and DASH had a reduced risk of wt gain and DM
  - Multiple diet patterns can reduce risk of T2D in women
- Curr Vasc Pharmacol, 2016
  - Review of diets on CV prevention
  - Med Diet – solid evidence
- Food and Nutr Res, 2016
  - Use of DASH and Med Diet in Middle East and Northern Africa can reduce CV disease
PREDIMED Plus: the next chapter – Is it diet alone or lifestyle?

- Assesses the effect of an intensive intervention with weight loss goals, based on the consumption of the Med diet, promotion of physical activity and behavioral therapy in the prevention of cardiovascular diseases
- 6,919 participants have been recruited in 22 centers and hospitals along with 7 support groups from all over Spain
- **Control group:** similar to that performed in PREDIMED-1
  - Med diet supplemented with extra virgin olive oil and nuts, without caloric restriction or promotion of physical activity or weight loss goals.
- **Intervention group:**
  - consumption of a hypocaloric Med diet (with a caloric restriction of 30%) supplemented with extra virgin olive oil and nuts
  - intensive lifestyle program with promotion of physical activity (45 minutes of walking a day or equivalent)
  - weight loss goals that include behavioral therapy.
Med Diet in US

• May 2016 – National Heart, Lung, and Blood Institute Workshop
  – In conjunction with Natl Cancer Institute and Office of Disease Prevention created a work group
  – “Toward testing the effects of a Med dietary pattern on CV and other diseases in the US”
  • How to conduct a lower cost study to test the effects of Med Diet
    – Are there foods that can be substituted? (Olive oil?)
    – Control group should be usual diet group not an active diet tx

Med Diet evidence -- CV, MetS, Cognition, Depression

Mediterranean Diet Inversely Associated With the Incidence of Metabolic Syndrome
The SUN prospective cohort Diabetes Care, volume 30, number 11, November 2007

Mediterranean Diet and Incidence of and Mortality From Coronary Heart Disease and Stroke in Women Circulation. 2009;119:1093-1100

Mediterranean Diet and Risk for Alzheimer’s Disease Ann Neurol 2006;59:912–921

Reduction in the Incidence of Type 2 Diabetes With the Mediterranean Diet Diabetes Care 34:14–19, 2011

Results of the PREDIMED-Reus nutrition intervention randomized trial

Association of the Mediterranean Dietary Pattern With the Incidence of Depression
The Seguimiento Universidad de Navarra/University of Navarra Follow-up (SUN) Cohort Arch Gen Psychiatry. 2009;66(10):1090-1098

The NEW ENGLAND JOURNAL of MEDICINE
Primary Prevention of Cardiovascular Disease with a Mediterranean Diet
Mediterranean Diet and DM

Multiple studies highlighting benefits of Med diet and prevention

• Br J Nutr, 2017 – Med Diet can reduce risk of T2D associated with obesity
  – >18,000 people in Spain – followed for 9.5 years – those with an increased fruit, veg, whole grain, olive oil diet had reduced rate of T2D and obesity by 43%

• J Nutr, 2016 – Strong support for use in DM and prevention

• BMJ Open, 2015 – Review of Mediterranean diet and T2D
  – Associated with better glycemic control and CV risk factors

• Br J Nutr, 2015 – Strong support of Med Diet
  – Effect of macronutrients on glycemic control
  – Comparing low GI, Mediterranean, vegan
    • Weight loss: no one diet is superior – all had impact

• Annals of Internal Medicine, 2014 – Prevention of DM with Med Diets
  – 3,541 older adults at risk for heart disease – followed for 4 years, randomized to Mediterranean diet with olive oil or nuts vs. low fat diet
  – Mediterranean diet reduces risk of developing DM

• Diabetologia, 2013 – Mediterranean and GL in relation to incidence of T2DM
  – 22,295 participants actively followed for ~11 years
  – Those who followed low GL Med diet - 12% less likely to develop DM
<table>
<thead>
<tr>
<th>Study</th>
<th>Population/Study Duration (Completion Rate)</th>
<th>Interventions (Type of Study)</th>
<th>Reported Dietary Intake</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toobert, 2003</td>
<td>n = 279 women with type 2 diabetes/6 months (88%)</td>
<td>MLP vs. UC (RCT)</td>
<td>Not reported</td>
<td>MLP vs. UC: A1C ↓ 0.4% vs. no change (SS); BMI ↓ 0.37 vs ↑ 0.2 kg/m² (SS); lipids: NS changes</td>
</tr>
<tr>
<td>Esposito, 2009</td>
<td>n = 215 people with newly diagnosed type 2 diabetes/4 years (57%)</td>
<td>Low-CHO (&lt;50% kcal); 1,500 kcal/day for women, 1,800 kcal/day for men</td>
<td>MEP: CHO intake 41–44 kcal; LF: CHO intake 51–54 kcal</td>
<td>MEP vs. LF (4-year): A1C ↓ 0.9 vs. ↓ 0.5% (SS); ↑ insulin sensitivity, ↑ HDL-C, ↓ TG, all SS; diabetes medications 40 vs. 70%, SS; no weight difference</td>
</tr>
<tr>
<td>Ellhayany, 2010</td>
<td>n = 259 people with type 2 diabetes/12 months (75%)</td>
<td>Low-CHO (35% kcal); MEP vs. Trad MEP (50–55% CHO) vs. 2003 ADA (50% CHO); 20 kcal/kg (RCT)</td>
<td>Mean reported kcal similar (~2,300 kcal); CHO: ADA 45.4%, Trad 45.2%, Low-CHO 41.9%</td>
<td>Mean weight loss 8.3 kg (NS between groups); A1C: Low-CHO ↓ 2 vs. ADA ↓ 1.6% (SS); HDL ↑ 3.9 mg/dL (SS); TG and LDL-C: all SS ↓</td>
</tr>
<tr>
<td>Itsiopoulos, 2011</td>
<td>n = 27 people with type 2 diabetes/2 weeks on each diet (100%)</td>
<td>Ad libitum MEP vs. usual diet (crossover RCT)</td>
<td>Not reported</td>
<td>MEP: A1C ↓ from 7.1 to 6.8% (SS); NS difference in weight and lipids</td>
</tr>
<tr>
<td>Toobert, 2011</td>
<td>n = 280 Latina women with type 2 diabetes/24 months (61.4%)</td>
<td>MLP (cultural adaptation of program in Toobert, 2003 (11) vs. UC (RCT)</td>
<td>Not reported</td>
<td>MLP and UC: NS changes in A1C and CHD risk score</td>
</tr>
</tbody>
</table>

CHO, carbohydrate; HDL-C, HDL cholesterol; LDL-C, LDL cholesterol; LF, low fat; NS, nonsignificant; RCT, randomized clinical trial; SS, statistically significant; TG, triglycerides; Trad, traditional; UC, usual care.
14 Points of the Med Diet Score (MDS)

- 2 points  Olive oil – use abundantly in cooking and dressings
- 1 point  Vegetables -- At least 2-3 servings per day
- 1 point  Fruits – At least 2-3 servings per day
- 1 point  Beans – 3 or more servings per week
- 1 point  Fish/seafood – 3 or more servings per week
- 1 point  Nuts/seeds – at least 1 serving per week
- 1 point  If you eat meat or poultry, choose lean or skinless
- 1 point  pasta, rice or other dishes with a sauce of tomato, garlic, onion, leeks and olive oil (sofrito) – 2 or more servings per week
- 1 point  If you drink alcohol, drink moderately
- 4 points  Limit or eliminate – cream, butter, margarine, red meat, sugary beverages, premade desserts and baked goods, french fries, potato chips, cured or fatty cheeses

Schroder H et al. J Nutr 2011;141:1140-1145
Alternative MDS – 9 Point System

• 1 point  Vegetables – 3-5 servings/day
• 1 point  Legumes – 4 or more servings/day
• 1 point  Fruit -- 3 or more servings/day
• 1 point  Nuts -- 4-5 servings/week
• 1 point  Whole grains – 2-3 servings/day
• 1 point  Fish – 2 or more servings/week
• 1 point  MUFA/SFA ratio – 1.5:1 plant:animal
• 1 point  Red/processed meats -- <2/week
• 1 point  Red wine – F: <2-7 drinks/week
  M: <4-7 drinks/week

Med Diet and Socioeconomic Status

- **Int J Epidemiology 2017** (doi:10.1093/ija/dyx145)
  - Prospective analysis of 18,991 M/F > age 35
  - Adherence to Med Diet using MDS
  - Over 4.3 years of f/u, 252 CVD events occurred
  - 2 point increase in MDS was associated with 15% reduced CVD risk
  - Higher income groups had CVD reductions
How to Use Med Diet in The Real World

• Replace butter and margarine with olive (or canola) oil
  – In cooking; dip bread in flavored olive oil; lightly spread olive oil on whole grain breads
  – Eat more skinless chicken and turkey, fish, beans, and nuts.
  – Eat fish twice per week
    • Tuna, salmon, trout, mackerel, herring
  – 3-5 servings veg/day
  – Choose whole grain breads, cereals, pastas, rice
  – Season meals with herbs and spices
  – Snack on nuts/seeds
    • Almonds, cashews, pistachios, walnuts – 1 OZ
  – Have fruit for dessert
  – Eat small portions of cheese (<1 oz)
  – Balance the meals – if you want to use a higher sodium item (feta) – make sure you are having lower sodium meals for the rest of the day
How to adhere to Med Diet on a Tight Budget

• Choose produce that is on sale
• Buy in-season fresh fruits and vegetables
• For ANY produce, DO NOT OVERCOOK
• Supplement with frozen vegetables and fruits
• Use canned fish
• Increase beans and legumes
12 Steps to Mediterranean Living

- Use olive oil as a substitute for butter and margarine.
- Snack on nuts, seeds and fruit, rather than processed snack foods.
- Include a generous variety of fresh, local produce (like leafy greens) with your daily main meal.
- Select whole grain breads, rice and pastas, along with other grains.
- Eat at least a few vegetarian meals each week.
- Serve dishes that include legumes like beans and lentils.
- Try fish, poultry, beans, nuts and eggs as alternatives to red meat.
- Limit red meat to small, occasional servings (a maximum of 12 to 16 ounces per month).
- If you drink red wine, include no more than a glass or two daily (1 for women, 2 for men).
- Enjoy fresh fruit for dessert.
- Set aside enough time to savor and enjoy each and every bite.
- Integrate physical activity to promote a healthy weight, fitness and sense of wellbeing into everyday habits.
### Mediterranean Diet Grocery List

#### Vegetables
- Artichokes
- Beets
- Bell Peppers
- Broccoli
- Cabbage
- Carrots
- Eggplant
- Garlic
- Green Beans
- Leafy Greens
- Leeks
- Mushrooms
- Onions
- Peas
- Squash
- Tomatoes (Fresh, Canned, Sauce)

#### Fruits
- Apples
- Apricots
- Avocados
- Bananas
- Berries
- Cherries
- Dates
- Figs
- Grapes
- Lemons
- Melon
- Oranges
- Peaches
- Plums
- Pomegranates

#### Beans
- Beans are a great way to add fiber and protein to a meal. Eat them in place of red meat at least once a week. If using canned, rinse and drain them before use to remove some of the sodium.
- Black Beans
- Chickpeas (Garbanzo)
- Hummus
- Lentils
- Pinto Beans
- White Beans (Cannellini)

#### Grains
- Choose mostly whole-grain products, specifically those with the word “whole” as the first ingredient, e.g. “whole wheat.”
- Barley
- Bread (e.g. Loaf, Pita)
- Bulgur
- Couscous
- Oatmeal
- Pasta
- Polenta
- Quinoa
- Rice

#### Nuts and Seeds
- Both are a great source of protein, fiber, and healthy fats. Stick to just a handful a day because they are high in calories.
- Almonds
- Cashews
- Flax
- Peanuts
- Pine Nuts
- Pumpkin Seeds (Pepitas)
- Sunflower Seeds
- Walnuts

#### Seafood
- White fish is a great lean protein. Oily fish like salmon contain healthy omega-3s.
- Clams
- Cod
- Flax
- Crab
- Salmon
- Scallops
- Shrimp
- Tilapia
- Tuna

#### Herbs and Spices
- Herbs and spices add great flavor without extra fat or salt.
- Basil
- Bay Leaves
- Chiles
- Cilantro
- Coriander
- Cumin
- Mint
- Parsley
- Rosemary
- Sage
- Tarragon
- Thyme
- Oregano
- Pepper

#### Healthy Oils/Fats
- Store oils in a cool, dark place to preserve their nutrients.
- Extra-Virgin Olive Oil
- Avocado Oil
- Canola Oil
- Grape Seed Oil

#### Dairy/Eggs
- Choose real traditional cheese, not processed cheese foods, and enjoy in moderation.
- Cheese
- Low-Fat Milk
- Plain or Greek Yogurt
- Eggs
Educational Handouts on Med Diet
Variety in Med Diet, Depending upon country

- **Italy** -- pulses in vegetable soups: pasta e fagioli (bean and pasta) and minestrone
- **France** -- white beans -- main ingredient of cassoulet (soup with duck or pork)
- Fasolada, a white bean soup, is the national dish of both **Greece and Cyprus**, while the **Turkish** equivalent, kuru fasulye, is the national dish of Turkey.
- Hummus, a creamy dip made with chickpeas and tahini (sesame paste), has **Arab roots** but is now revered throughout the Eastern Mediterranean and beyond.
- Chickpeas also can be ground with spices and shaped into balls or patties to make falafel, a delicious **Middle Eastern** street food.
- Moudammas is a cooked fava bean dish popular in **Middle Eastern** cuisine, while favas also play a significant role in Italian cooking (both in pasta dishes and vegetable sides).
- Lentils can be puréed with spices to make moujaddara, a **Middle Eastern** hummus-like dip.
- In **Tuscany**, lentils are cooked with pork sausage and are a staple of the New Year's Day meal, as lentils symbolize good luck and prosperity in **Italy** due to their coin-like shape.
Med Diet resources

– https://oldwayspt.org/traditional-diets/mediterranean-diet/mediterranean-diet-resources
– http://oldwayspt.org/mediterranean-diet-pyramid
– https://oldwayspt.org/shopping-and-cooking-resources
– http://www.med-diet.eu/P42A0C0S884/Resources.htm
The Mediterranean Diet should include:

A. Less fruit
B. More nuts
C. More dairy
D. Whatever you would like to eat!
The Mediterranean Diet should include:

A. Less fruit
B. More nuts
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D. Whatever you would like to eat!
Summary

• New diet plans are introduced on a frequent basis
  – Our role as diabetes educators is to help our patients navigate their benefits and which one would be right for each individual
• There are a variety of meal plan options available for people with diabetes
• No one plan will be best for everyone
  – Using components of certain diets may be the best first step for some PWD
• Individualizing is key to sticking to a plan
  – Also, need to realize that if it does not work, there are others that may be beneficial
  – The best diet for any one person is the one they will continue to follow
  – Success is dictated by a gradual shift toward healthier eating habits
• As diabetes educators, it is our role to help our patients navigate the meal plans available and help them choose the one (or several) that may fit into their lives
• The Mediterranean Diet is a proven meal plan that can reduce risk of CVD, pre-DM regardless of geographic location with a plethora of resources to use
Additional Resources

• DGA 2015-2020 should be a staple resource for everyone

• MyPlate resources for all ages
  – https://www.choosemyplate.gov
  – Find a plate visual from the hundreds online to use with your patients

• DASH
Additional Resources

• Use the approaches and tools in the AHA statement
  – [http://circ.ahajournals.org/content/134/22/e505.long](http://circ.ahajournals.org/content/134/22/e505.long)
  – 2 day sample menu

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**Appendix 7. Healthcare Providers’ Guide to Dietary Assessment and Counseling**

1. Assess current diet/eating behavior (see Table 6 for assessment tools)
2. Calculate BMI and energy needs based on goals: weight loss, weight maintenance (see [http://www.heart.org/HEARTORG/HealthyLiving/WeightManagement/BodyMassIndex/Body-Mass-Index-In-Adults-BMI-Calculator-for-Adults_UCM_307849_Article.jsp#](http://www.heart.org/HEARTORG/HealthyLiving/WeightManagement/BodyMassIndex/Body-Mass-Index-In-Adults-BMI-Calculator-for-Adults_UCM_307849_Article.jsp#))
3. Use Super Tracker and/or other tools ([http://www.choosemyplate.gov/supertracker-tools/supertracker.html](http://www.choosemyplate.gov/supertracker-tools/supertracker.html))
4. Discuss calorie-based AHA diet recommendations (see Table 2)
5. Discuss recommended physical activity levels
6. Using motivational interviewing techniques, encourage patient/client to set realistic goals for diet and physical activity adherence
7. Encourage patient/client to choose a self-monitoring plan
8. Set date for follow-up

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**Appendix 8. Dining Out Checklist**

Eating out can be challenging when trying to follow a heart-healthy diet. Here are some suggestions to help you stay on track:

- Call ahead or go online to check out the menu of a restaurant you wish to consider
- Review dietary changes with wait staff (e.g., broiled, baked, not fried)
- One serving of meat/chicken should be about the size of a deck of cards; a baked potato serving is about the size of a computer mouse; 1 cup is about the size of a baseball; 1 tsp is about the size of your thumb
- Consider what you would do if cooking this at home (remove butter sauce, use olive oil, add fresh lemon)
- Send back anything that is not what you requested (too salty? butter added?)
- Watch out for salads that sound healthy but include bacon, cheese, fried tortilla strips, or high-fat calorie dressing
- If all else fails, request a vegetable plate with all the vegetables they are serving that day
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