

STATE OF THE STATE: TYPE II DIABETES

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Goals and Objectives

1. Describe the levels of type 2 diabetes and prediabetes in West Virginia and the US
2. Present relevant factors for intervention in West Virginia
3. Discuss prediabetes and prevention of type 2 diabetes
4. Describe current lifestyle interventions and standards of care for nutrition therapy

Prediabetes: Here's the facts!

- 86 million people have prediabetes
 - 9 out of 10 have yet to be diagnosed
- West Virginia: 1 in 12 people have prediabetes
- If no lifestyle changes are made, 15-30% of these will develop type 2 diabetes within 5 years

2014 CDC DATA: How does WV compare?

- Type 2 diabetes in adults:
 - 10% in United States
 - 14.1% in West Virginia, one in four don't know
 - Only Puerto Rico outranks WV, 15.7%

2014 CDC DATA: How does WV compare?

- Diabetes in Adults by Gender:
 - Males: 9.8% in United States
 - Males: 12.2% in West Virginia
 - Only Puerto Rico outranks WV
 - Females: 8.6% in United States
 - Females: 11.9% in West Virginia
 - Mississippi, Guam and Puerto Rico outranks WV

ADA Standards of Care

- Funded out of Association's general revenues and *does not use* industry support.
- Slides correspond with sections within the Standards of Medical Care in Diabetes - 2017.
- Reviewed and approved by the Association's Board of Directors.

Promoting Health and Reducing Disparities in Populations: Crucial for WV Practitioners

Tailoring Treatment to Reduce Disparities

Key Recommendation

- Providers should assess social context, including potential food insecurity, housing stability, and financial barriers, and apply that information to treatment decisions. **A**

Health Disparities

- Ethnic/Cultural/Sex Differences
- Access to Health Care
 - Lack of Health Insurance
- Food Insecurity
- Language Barriers
- Homelessness

System-Level Interventions

Key Recommendations

- Patients should be referred to local community resources when available. **B**
- Patients should be provided with self-management support from lay health coaches, navigators, or community health workers when available. **A**

Prevention or Delay of Type 2 Diabetes

Prediabetes*

FPG 100–125 mg/dL
(5.6–6.9 mmol/L): IFG

OR

2-h plasma glucose 140–199 mg/dL (7.8–11.0
mmol/L): IGT

OR

A1C 5.7–6.4%

* For all three tests, risk is continuous, extending below the lower limit of a range and becoming disproportionately greater at higher ends of the range.

Recommendations: Prevention or Delay of T2DM

- Patients with prediabetes should be referred to an intensive diet and physical activity behavioral counseling program adhering to the tenets of the DPP (Diabetes Prevention Program) targeting a loss of 7% of body weight, and should increase their moderate physical activity to at least 150 min/week. **A**

Recommendations: Prevention or Delay of T2DM (2)

- Based on cost-effectiveness of diabetes prevention, such programs should be covered by third-party payers. **B**
- Metformin therapy for prevention of type 2 diabetes should be considered in those with prediabetes, especially for those with BMI ≥ 35 kg/m², aged < 60 years, women with prior gestational diabetes (GDM), those with rising A1C despite lifestyle intervention. **A**

New Recommendation: Prevention or Delay of T2DM (3)

- Long-term use of metformin may be associated with biochemical vitamin B12 deficiency, and periodic measurement of vitamin B12 levels should be considered in metformin-treated patients, especially in those with anemia or peripheral neuropathy. **B**

Recommendations: Prevention or Delay of T2DM (4)

- Monitor at least annually for the development of diabetes in those with prediabetes. **E**
- Screening for and treatment of modifiable risk factors for CVD is suggested. **B**

Recommendations: Prevention or Delay of T2DM (5)

- DSME and DSMS (Diabetes Self-Management Education and Support) programs are appropriate for people with prediabetes to receive education and support to develop and maintain behaviors that can prevent or delay the onset of diabetes. **B**
- Technology assisted tools can be useful elements of effective lifestyle modification to prevent diabetes. **B**

Criteria for the Diagnosis of Diabetes

Fasting plasma glucose (FPG)
 ≥ 126 mg/dL (7.0 mmol/L)

OR

2-h plasma glucose ≥ 200 mg/dL
(11.1 mmol/L) during an OGTT

OR

A1C $\geq 6.5\%$

OR

Classic diabetes symptoms + random plasma glucose
 ≥ 200 mg/dL (11.1 mmol/L)

Obesity Management for the Treatment of Type 2 Diabetes

Recommendations: Physical Activity (1)

- Children with diabetes/prediabetes: at least 60 min/day physical activity **B**
- Most adults with type 1 **C** and type 2 **B** diabetes: 150+ min/wk of moderate-to-vigorous activity over at least 3 days/week with no more than 2 consecutive days without exercise. Shorter durations (minimum 75 min/week) of vigorous- intensity or interval training may be sufficient for younger and more physically fit individuals.
- Adults with type 1 **C** and type 2 **B** diabetes should perform resistance training in 2-3 sessions/week on nonconsecutive days

Recommendations: Physical Activity (2)

- All adults, and particularly those with type 2 diabetes, should decrease the amount of time spent in daily sedentary behavior. **B** Prolonged sitting should be interrupted every 30 min for blood glucose benefits, particularly in adults with type 2 diabetes. **C**
- Flexibility training and balance training are recommended 2–3 times/week for older adults with diabetes. Yoga and tai chi may be included based on individual preferences to increase flexibility, muscular strength, and balance. **C**

Benefits of Weight Loss

- Delay progression from prediabetes to type 2 diabetes
- Positive impact on treatment of type 2 diabetes
 - Most likely to occur early in disease development
- Improves mobility, physical and sexual functioning & health-related quality of life

Recommendations: Diet, physical activity & behavioral therapy

- Diet, physical activity & behavioral therapy designed to achieve >5% weight loss should be prescribed for overweight & obese patients with T2DM ready to achieve weight loss. **A**
- Interventions should be high-intensity (≥ 16 sessions in 6 months) and focus on diet, physical activity & behavioral strategies to achieve a 500 - 750 kcal/day energy deficit. **A**

Recommendations: Diet, physical activity & behavioral therapy

- Diets should be individualized, as those that provide the same caloric restriction but differ in protein, carbohydrate, and fat content are equally effective in achieving weight loss. **A**
- Patients who achieve short-term weight loss goals should be prescribed long-term maintenance programs. **A**

Recommendations: Diet, physical activity & behavioral therapy

- Short-term (3-month) interventions that employ very low calorie diets (≤ 800 kcal/day) and total meal replacements may be prescribed for select patients by trained practitioners with close medical monitoring.

To maintain weight loss, such programs must incorporate long-term, comprehensive, weight maintenance counseling. **B**

Recommendations: Pharmacologic Therapy For T2DM

- Metformin, if not contraindicated and if tolerated, is the preferred initial pharmacologic agent for T2DM. **A**
- Consider insulin therapy (with or without additional agents) in patients with newly dx'd T2DM who are markedly symptomatic and/or have elevated blood glucose levels (≥ 300 mg/dL) or A1C ($\geq 10\%$). **E**

Lifestyle Management

Recommendations: Diabetes Self-Management Education & Support

- All people with diabetes should participate in DSME and DSMS both at diagnosis and as needed thereafter. **B**
- Effective self-management, improved clinical outcomes, health status, and quality-of-life are key outcomes of DSME and DSMS and should be measured and monitored as part of care. **C**
- DSME/S should be patient-centered, respectful, and responsive to individual patient preferences, needs, and values that should guide clinical decisions. **A**

Recommendations: Diabetes Self-Management Education & Support (2)

- DSME/S programs have the necessary elements in their curricula to delay or prevent the development of type 2 diabetes; DSME/S programs should be able to tailor their content when prevention of diabetes is the desired goal. **B**
- Because DSME and DSMS can improve outcomes and reduce costs **B**, DSME and DSMS should be adequately reimbursed by third-party payers. **E**

Nutrition Standards

Goals of Nutrition Therapy

1. Promote & support healthful eating patterns, emphasizing a variety of nutrient-dense foods in appropriate portion sizes, to improve health and to:
 - Achieve and maintain body weight goals
 - Attain individualized glycemic, blood pressure, and lipid goals
 - Delay or prevent complications of diabetes
2. Address nutrition needs based on personal & cultural preferences, health literacy & numeracy, access to healthful foods, willingness and ability to make behavioral changes & barriers to change.

Goals of Nutrition Therapy (2)

3. To maintain the pleasure of eating by providing non-judgmental messages about food choices.
4. Provide practical tools for developing healthful eating patterns rather than focusing on individual macronutrients, micro-nutrients, or single foods.

Recommendations: Nutrition

Effectiveness of Nutrition Therapy:

- An individualized MNT program is recommended for all people with type 1 and type 2 diabetes. **A**
- For people with T1D or T2D on a flexible insulin program, education on carb counting and, in some cases, fat and protein gram estimation can improve glycemic control. **A**
- For people whose daily insulin dosing is fixed, a consistent pattern of carb intake can result in improved glycemic control and a reduced risk of hypoglycemia. **B**

Recommendations: Nutrition (2)

Effectiveness of Nutrition Therapy (2):

- Emphasizing healthy food choices and portion control may be more helpful for those with type 2 diabetes who are not taking insulin, who have limited health literacy or numeracy, and who are elderly and prone to hypoglycemia. **B**
- Because diabetes nutrition therapy can result in cost savings **B** and improved outcomes (e.g., A1C reduction) **A**, MNT should be adequately reimbursed by insurance and other payers. **E**

Recommendations: Nutrition (3)

Energy Balance:

- Modest weight loss achievable by the combination of lifestyle modification and the reduction of calorie intake benefits overweight or obese adults with type 2 diabetes and also those with prediabetes. Intervention programs to facilitate this process are recommended. **A**

Recommendations: Nutrition (4)

Eating patterns & macronutrient distribution:

- Macronutrient distribution should be individualized while keeping total calorie and metabolic goals in mind. **E**
- Carbohydrate intake from whole grains, vegetables, fruits, legumes, and dairy products, with an emphasis on foods higher in fiber and lower in glycemic load, should be advised over other sources, especially those containing sugars. **B**

Recommendations: Nutrition (5)

Eating patterns & macronutrient distribution (2):

- People with diabetes and those at risk should avoid sugar-sweetened beverages to control weight and reduce their risk for CVD and fatty liver **B** and should minimize the consumption of foods with added sugar that have the capacity to displace healthier, more nutrient-dense food choices. **A**
- A variety of eating patterns are acceptable for the management of type 2 diabetes and prediabetes including Mediterranean, DASH, and plant-based diets. **B**

Recommendations: Nutrition (6)

Protein:

- In individuals with type 2 diabetes, ingested protein appears to increase insulin response without increasing plasma glucose concentrations. Therefore, carbohydrate sources high in protein should not be used to treat or prevent hypoglycemia. **B**

Recommendations: Nutrition (7)

Dietary Fat:

- An eating plan emphasizing elements of a Mediterranean-style diet rich in monounsaturated fats may improve glucose metabolism and lower CVD risk and can be an effective alternative to a low-fat, high-carb diet. **B**
- Eating foods containing long-chain ω -3 fatty acids, such as fatty fish, nuts, and seeds, is recommended to prevent or treat CVD **B**; however, evidence does not support a beneficial role for ω -3 dietary supplements. **A**

Recommendations: Nutrition (8)

Micronutrients and herbal supplements:

- There is no clear evidence that dietary supplementation with vitamins, minerals, herbs, or spices can improve diabetes, and there may be safety concerns regarding the long-term use of antioxidant supplements such as vitamins E and C and carotene. **C**

Recommendations: Nutrition (9)

Alcohol:

- Adults with diabetes should drink alcohol only in moderation (no more than one drink per day for adult women and no more than two drinks per day for adult men). **C**
- Alcohol consumption may place people with diabetes at an increased risk for hypoglycemia, especially if taking insulin or insulin secretagogues. Education and awareness regarding the recognition and management of delayed hypoglycemia are warranted. **B**

Recommendations: Nutrition (10)

Sodium:

- As for the general population, people with diabetes should limit sodium consumption to less than 2,300 mg/day, although further restriction may be indicated for those with both diabetes and hypertension. **B**

Recommendations: Nutrition (11)

Nonnutritive sweeteners:

- The use of nonnutritive sweeteners has the potential to reduce overall calorie and carbohydrate intake if substituted for caloric sweeteners and without compensation by intake of additional calories from other food sources. Nonnutritive sweeteners are generally safe to use within the defined acceptable daily intake levels. **B**

Thank you

Questions?