

THE SOUTHERN DIABETES INITIATIVE



Screen, Assess, Treat, Repeat

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Faculty Disclosure Information

The following relationships exist related to this presentation:

Charles Vega, MD, FAAFP: No financial relationships to disclose.

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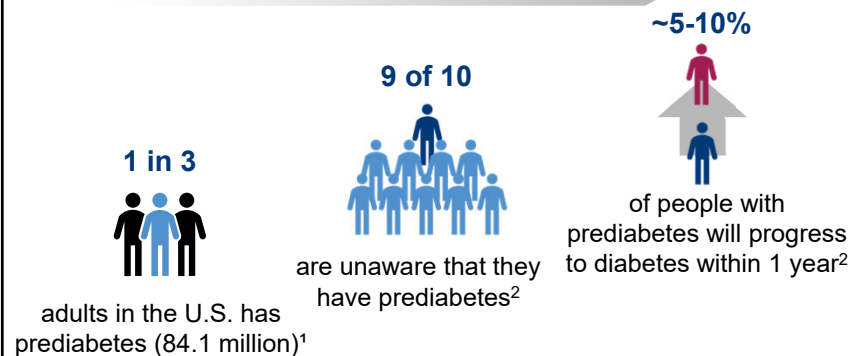
Learning Objectives

- ✦ Improve screening and diagnosis of prediabetes and diabetes
- ✦ Prevent T2DM and delay progression through patient education and lifestyle interventions

Abbreviations

FPG	Fasting plasma glucose
HbA1c	Hemoglobin A1c
IFG	Impaired fasting glucose
IGT	Impaired glucose tolerance
OGTT	Oral glucose tolerance test
PG	Plasma glucose

Steps on the Road to Diabetes



(1) CDC and Prevention. National Diabetes Statistic Report, 2017; (2) Tabak AG, et al. Prediabetes: a high-risk state for the development. Lancet. 2012;379:2279-2290.

Prediabetes Has Consequences

Prediabetes and diabetes are a continuum

Pre-diabetes:

↑risk of **microvascular and macrovascular complications**

Lack of clinician awareness of these risks:

↓**vigilance** and ↓**early intervention**



Brannick, B, et al. Exp Biol Med (Maywood). 2016;241(12):1323-1331; Decode Study Group. Lancet. 1999;354:617-662; Huang Y, et al. Diabetologia. 2014 Nov; 57(11):2261-2269.



Screening for Prediabetes and Diabetes

Screening Adults for Prediabetes and Diabetes



For asymptomatic adults:

Use **informal assessment of risk factors** and **validated tools** to screen for prediabetes and risk for future diabetes

Additional screening option:
<https://www.diabetes.org/risk-test>

Focuses on seven categories

- | | |
|------------------|------------------|
| 1 AGE | 4 BLOOD PRESSURE |
| 2 GENDER | 5 WELLNESS |
| 3 FAMILY HISTORY | 6 ETHNICITY |
| | 7 BMI |

ADA. Diabetes Care. 2019; 42(1):S13-27.

Audience Response Question



The ADA suggests testing which of the following patients for prediabetes and diabetes?

1. A 25-year-old Latina woman with BMI 33 kg/m² and PCOS
2. A 30-year-old African American man with a BMI 27 kg/m² and a first degree relative with T2DM
3. A 47-year-old Caucasian woman with a BMI 23 kg/m² and no risk factors for T2DM
4. A 35-year-old Asian woman with a BMI 23 kg/m² who is physically inactive
5. All of the above

Rationale



- | | |
|--|--|
| ☒ A 25-year-old Latina woman with BMI 33 kg/m ² and PCOS | Yes, she has a BMI ≥ 25 kg/m ² and an additional risk factor (PCOS) |
| ☒ A 30-year-old African American man with a BMI 27 kg/m ² and a first degree relative with T2DM | Yes, he is a member of a high-risk ethnic group with a BMI ≥ 25 kg/m ² and a first degree relative with diabetes |
| ☒ A 47-year-old Caucasian woman with a BMI 23 kg/m ² and no risk factors for T2DM | Yes, she is ≥ 45 years old |
| ☒ A 35-year-old Asian woman with a BMI 23 kg/m ² who is physically inactive | Yes, data suggest that for an Asian American a BMI ≥ 23 kg/m ² may be overweight and she has another risk factor (physical inactivity) |
| ☒ All of the above | Best answer |

Testing Adults for Prediabetes and Diabetes

The ADA recommends testing

Anyone **age ≥ 45 years**

Anyone **overweight** (BMI ≥ 25 or ≥ 23 kg/m² in Asian Americans) **AND at least one additional risk factor:**



- ☐ Physical inactivity
- ☐ First degree relative with diabetes
- ☐ Member of high-risk ethnic population
- ☐ Known previous prediabetes
- ☐ CVD, hypertension, or dyslipidemia
- ☐ Polycystic ovary syndrome
- ☐ History of gestational diabetes or delivered a baby weighing >9 lbs
- ☐ Other clinical conditions associated with insulin resistance (e.g., acanthosis nigricans)

ADA. *Diabetes Care*. 2019; 41(1):S13-27.

Audience Response Question



Which of the following does the ADA consider the best screening test for prediabetes and diabetes?

1. Fasting plasma glucose (FPG)
2. 2-hour plasma glucose during 75-g oral glucose tolerance test (OGTT)
3. HbA1c
4. All are equally appropriate

Rationale

- ☒ Fasting plasma glucose (FPG)
- ☒ 2-hour plasma glucose during 75-g oral glucose tolerance test (OGTT)
- ☒ HbA1c
- ☒ All are equally appropriate Best answer

Diagnostic Criteria for Prediabetes and Diabetes in Non-pregnant Adults

Normal	Prediabetes	Diabetes
FPG <100 mg/dL	IFG FPG 100-125 mg/dL	FPG ≥126 mg/dL
2-h PG <140 mg/dL	IGT 2-h PG ≥140-199 mg/dL	2-h PG during OGTT ≥200 mg/dL OR Random PG ≥200 mg/dL + symptoms (polydipsia, polyuria, polyphagia, weakness, unexplained weight loss, blurred vision)
HbA1c† <5.6%	5.7 to 6.4%	≥6.5%

Absent unequivocal hyperglycemia, a diagnosis of diabetes should be confirmed with a **2nd** abnormal test

ADA. Diabetes Care. 2019; 42(1):S13-28.
†performed using a method that is certified by the NGSP
and standardized or traceable to the Diabetes Control and
Complications Trial (DCCT) reference assay

FPG = fasting plasma glucose; **IFG** = impaired fasting glucose; **IGT** = impaired glucose tolerance; **OGTT** = oral glucose tolerance test; **PG** = plasma glucose

Audience Response Question

According to the 2019 ADA guidelines for screening adults for T2DM, which of the following is true?

- If results are normal, screening should be repeated every 5 years
- Patients with pre-diabetes should have repeat testing every 6 months
- Screening frequency should be dependent on initial screening results and risk status
- Women with a h/o gestational diabetes should be screened every year

Rationale Screening Frequency in Adults

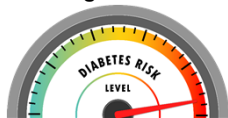
- ☒ If results are normal, screening should be repeated every 5 years
 - ☒ Patients with pre-diabetes should have repeat testing every 6 months
 - ☒ Screening frequency should be dependent on initial screening results and risk status
 - ☒ Women with a h/o gestational diabetes should be screened every year
- If results are normal, screening should be repeated every 3 years
- Patients with pre-diabetes (HbA1c ≥5.7%, IGT, or IFG) should have repeat testing every 12 months at a minimum, so every 6 months is not incorrect
- Correct
- They should have lifelong testing at least every 3 year

ADA. Diabetes Care. 2019; 42(1):S13-28.

Screening Asymptomatic Children for Prediabetes and Diabetes

Criteria

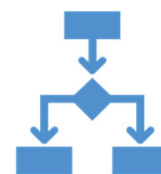
Consider for all children who are **overweight** ($\geq 85\%$ percentile) or **obese** ($\geq 95\%$ percentile) and who have **1 of any of the following risk factors**:



- ☐ Family history of T2DM in first- or second-degree relative
- ☐ High-risk race/ethnicity
- ☐ Signs of insulin resistance/conditions associated with insulin resistance
- ☐ Maternal history of DM or GDM during child's gestation

- Risk-based screening should begin at **≥ 10 years/onset of puberty**
- If tests are normal, repeat testing at least **every 3 years** (more frequently if BMI is increasing)
- **HbA1C test** is recommended for diagnosis

ADA. *Diabetes Care*. 2019; 42(1):S13-28.



Treating Prediabetes and Diabetes

Audience Response Question



According to the ADA, which of the following recommendations can help prevent a patient with prediabetes from progressing to T2DM?

1. 150 min/week of brisk walking or exercise of similar intensity
2. Achieve and maintain a 5% weight loss in 6 months
3. Exercise at least 2 $\times$ /week
4. All of the above

Rationale



☒	150 min/week of brisk walking or exercise of similar intensity	Yes
☒	Achieve and maintain a minimum of 5% weight loss in 6 months	Achieve and maintain a minimum of 7% weight loss in 6 months
☒	Exercise at least 2 $\times$ /week	Exercise at least 3 $\times$ /week
☒	All of the above	Incorrect

Treating Prediabetes and Preventing Diabetes (The Diabetes Prevention Program)

Intensive lifestyle intervention programs that...

Achieve and maintain loss of
7-10% of initial body weight



Maintain moderate-intensity
physical activity at least
150 min/week



58%

Can **reduce the incidence of T2DM by 58%** over 3 years, with sustained reduction in the rate of conversion to T2DM

ADA. *Diabetes Care*. 2019; 42(1):S29-33.

Physical Activity Recommendations for Adults with T2DM

Get Active



Moderate to vigorous intensity
physical activity at least **3x/week**
(≥150 min/week)



Flexibility and balance training
2-3x/week for older adults with
diabetes



Resistance exercise **2-3x/week**,
non-consecutive days

Stay Active



No more than 2
consecutive days without
exercise



Decrease sedentary time

ADA. *Diabetes Care*. 2018; 41(1):S38-50.

Pharmacologic Treatment of Prediabetes

2019 ADA

Metformin therapy for prevention of T2DM should be considered in those with prediabetes, especially for those with BMI ≥35 kg/m², those aged <60 years, and women with prior gestational DM **A**

ADA. *Diabetes Care*. 2019; 42(1):S29-33.

Metformin



General benefits:

Effective, low risk of hypoglycemia,
promotes weight loss



CV benefit:

May decrease heart failure hospital
readmissions and reduce the risk of
cardiovascular events and death



Side effects:

Nausea, vomiting, diarrhea, abdominal
discomfort, dehydration, possible B12
malabsorption, rare lactic acidosis



Obtain eGFR prior to starting.
Initiation not recommended if
eGFR between 30-45
mL/min/1.73 m²

Contraindicated in patients
with chronic kidney disease
(CKD) and eGFR ≤ 30
mL/min/1.73 m²

ADA. *Diabetes Care*. 2018;41 (S1):S73-S85; Garber AJ, et al. *Endocr Pract*. 2018;24(1):91-120; Crowley MJ, et al. *Ann Intern Med*. 2017;166(3):191-200; FDA Drug Safety Communication: FDA revises warnings regarding use of the diabetes medicine metformin in certain patients with reduced kidney function 4/08/2016.

Summary for Patients with Prediabetes



Screen for development of diabetes **at least annually**



Refer to an intensive behavioral lifestyle intervention program modeled on the DPP



- Achieve and maintain **7% loss of initial body weight**
- Moderate-intensity physical activity (such as brisk walking) at **least 150 min/week**



Screen and treat for other CV risk factors



Consider **metformin**

ADA. Diabetes Care. 2019; 42(1):S29-33.

Audience Response Question



According to the ADA, which of the following is NOT a fundamental aspect of diabetes care?

1. Diabetes self-management education and support (DSMES)
2. Physical activity
3. Referral for bariatric surgery if BMI > 35 kg/m²
4. Psychosocial care
5. Smoking cessation

Answer



According to the ADA, which of the following is NOT a fundamental aspect of diabetes care?

Diabetes self-management education and support (DSMES)

Physical activity

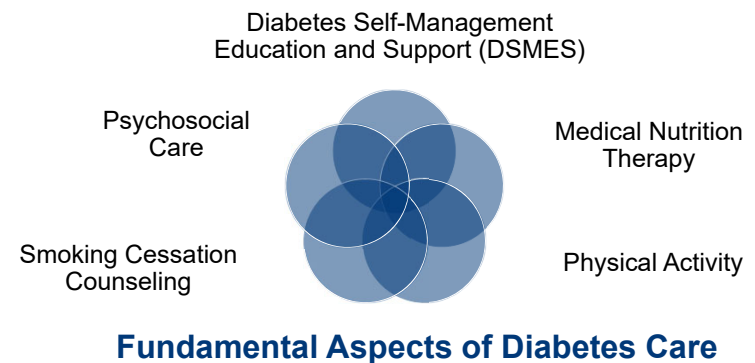
Referral for bariatric surgery if BMI > 35 kg/m²

Is NOT a fundamental aspect of diabetes care according to the ADA

Psychosocial care

Smoking cessation

Lifestyle Management of T2DM



ADA. Diabetes Care. 2018; 41(1):S38-50.

Diabetes Self-Management Education Support (DSMES)



All patient should be assessed for:

Nutrition

With a registered dietitian for medical nutritional therapy

Education

Diabetes self-management education and support

Emotional Health

With a mental health professional if needed

Powers, et al. *Diabetes Care*. 2015;38:1372-1382.

DSMES



DSMES services have a positive impact on¹

- ☐ Eating patterns
- ☐ Activity levels
- ☐ HbA1c levels
- ☐ Prevention or delay of diabetes complications
- ☐ Quality of life

DSMES services can address a patient's²

Health beliefs
Current knowledge
Cultural needs
Family support
Financial status
Physical limitations
Emotional concerns
Medical history
Health literacy

Other factors that influence their ability to meet the challenges of self-management

1) Powers MA, et al. *J Acad Nutr Diet*. 2015;115(8):1323-1334; 2) Powers MA, et al. *Diabetes Care*. 2015;38(7):1372-1382.

Psychosocial Care

A patient-centered approach including psychosocial care should be provided to ALL people with diabetes

Psychosocial screening

- Attitudes about diabetes, expectations, mood and affect, general and diabetes-related QOL, psychiatric history, available resources, more...

Assess for symptoms of diabetes distress, depression, anxiety, disordered eating, cognitive capacity

- Initially, at intervals, when there a change in patient health or life status

ADA. *Diabetes Care*. 2018; 41(1):S38-50.