Prediabetes & Type 2 Diabetes Prevention
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Director, Virginia Center for Diabetes Prevention & Education, UVA

Disclosures

• No disclosures
Learning Objectives

• Screen patients for prediabetes and type 2 diabetes risk

• Refer patients to a Diabetes Prevention Program or a Diabetes Self-Management Program

• Identify and treat modifiable risk factors for cardiovascular disease

What is Prediabetes?

<table>
<thead>
<tr>
<th>Fasting plasma glucose</th>
<th>2-h plasma glucose during OGTT</th>
<th>Hemoglobin A1C</th>
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<tbody>
<tr>
<td>Diabetes</td>
<td>Prediabetes Impaired fasting glucose</td>
<td>126 mg/dL</td>
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<tr>
<td>Prediabetes</td>
<td></td>
<td>100 mg/dL</td>
</tr>
<tr>
<td>Normal</td>
<td></td>
<td>Normal</td>
</tr>
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In the absence of unequivocal hyperglycemia, diagnosis requires two abnormal test results from the same sample or in two separate test samples

Prevalence of Prediabetes

- 84.1 million people (33.9% of U.S. adults aged 18 years or older) had prediabetes in 2015
- Nearly half of adults aged 65 years or older had prediabetes
- Among adults with prediabetes, 11.6% reported being told by HCP that they had this condition
- Prevalence of prediabetes was similar among racial and ethnic groups

2011–2014 National Health and Nutrition Examination Survey (NHANES), CDC

ASSESSMENT
Case Study

Introduction

• Mr. M is an African American male who just turned 60 years old. He comes in for a routine checkup a week after his birthday. He has mild asthma and is a pack-a-day smoker but is considering quitting. He has no other health complaints and hasn’t had a checkup in 3 years.

• He is an investment banker and spends long hours at the office on his computer. He claims that he has limited time to exercise. No one in his immediate family has had diabetes but his father has hypertension.

• Physical exam: height, 5’9” (175 cm); weight, 210 lbs (95 kg); BMI, 31 kg/m²; BP, 130/80 mmHg

Type 2 Diabetes Risk Factors

• First-degree relative with diabetes
• High-risk race/ethnicity (e.g., African American, Latino, Native American, Asian American, Pacific Islander)
• History of CVD
• Hypertension (≥140/90 mmHg or on therapy for hypertension)
• HDL cholesterol level <35 mg/dL (0.90 mmol/L) and/or a triglyceride level >250 mg/dL (2.82 mmol/L)
• Women with polycystic ovary syndrome
• Physical inactivity
• Other clinical conditions associated with insulin resistance (e.g., severe obesity, acanthosis nigricans)

Criteria for Screening for Prediabetes in Asymptomatic Adults

- Consider testing all adults with a BMI $\geq 25$ kg/m$^2$ ($\geq 23$ in Asian Americans) and additional risk factors
  - If no risk factors, consider screening no later than age 45 years
- Women who were diagnosed with gestational diabetes should have lifelong testing at least every 3 years
- If normal results, repeat testing at $\leq 3$-year intervals
  - More frequently depending on initial test results and risk factors
  - Test yearly if prediabetes


Case Study (cont’d)

Discussion Question
Should Mr. M be screened for type 2 diabetes?
A. Yes
B. No
Risk Assessment for Diabetes

• Be proactive
• Assess for risk factors
• Ask patients to take the ADA Diabetes Risk Test.* (5 or more=risk)
• If at high risk:
  • refer to a Diabetes Prevention Program
  • continue ongoing diabetes screening

* Available at: diabetes.org/risktest

PREVENTING OR DELAYING TYPE 2 DIABETES
Overview of Type 2 Diabetes Prevention Trials: Lifestyle Modification Intervention

- Lifestyle intervention continues to have an effect, even after 20 years

<table>
<thead>
<tr>
<th>Study</th>
<th>n</th>
<th>Intervention</th>
<th>Treatment</th>
<th>Risk reduction</th>
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<tr>
<td>Da Qing1,2</td>
<td>IGT</td>
<td>577</td>
<td>Lifestyle</td>
<td>6 years 23 years</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
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<td>23 years</td>
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<tr>
<td>Finnish DPS3,4</td>
<td>IGT</td>
<td>523</td>
<td>Lifestyle</td>
<td>3+ years</td>
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<td>Diabetes Prevention Program (DPP)5,6</td>
<td>IGT</td>
<td>3,324</td>
<td>Lifestyle</td>
<td>3 years</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10 years</td>
</tr>
</tbody>
</table>


Diabetes Prevention Program

- Lifestyle reduced type 2 diabetes by 58% over 3 years
- Metformin reduced type 2 diabetes by 31%
- Major goals of the program:
  - Achieve and maintain minimum 7% weight loss
  - 150 minutes of physical activity/week (brisk walking)
Diabetes Prevention Program: 10-Year Cost-Effectiveness

- Lifestyle cost-effective, metformin cost-saving vs. placebo
- Investment in lifestyle, metformin interventions for diabetes prevention in high-risk adults provides good value

National Diabetes Prevention Program
National DPP

- Year-long behavioral lifestyle intervention program modeled on the Diabetes Prevention Program
- Group classes
- Programs provided within community & at some clinics
- Goals
  - achieve and maintain 5-7% loss of initial body weight
  - increase moderate-intensity physical activity (such as brisk walking) to at least 150 min/week

[cdc.gov/prediabetes]
1. Structured curricula available through CDC
2. National DPP Lifestyle Coach training and certification for lay persons and healthcare personnel who will deliver National DPP
3. Intervention delivery method and intensity
   - In-person group or combined with virtual/online
   - Program duration of 12 months.
   - At least 22 sessions

**Core curriculum**
16 sessions in Month 0-6

**Follow-up phase**
Sessions meet once a month in 7-12 mos

Performance metrics are required to certify a program through CDC.

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**How are we doing in Virginia:**

**Session Attendance (2018)**

- **Core Sessions (N = 15)**
- **Post-Core Sessions (N = 13)**

- **Virginia Survey**
- **CDC Requirement:**
  - Phase 1: 60% attending 9 sessions in months 0-6
  - Phase 2: 60% attending 3 sessions in months 7-12
How are we doing in Virginia: Weight Loss (2018)

![Graph showing weight loss percentages](chart.png)

**Weight Loss 6 months (N = 15)**
- 4.50%

**Weight Loss 12 months (N = 12)**
- 5%
- 5%

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**Lifestyle Modification: Facilitating Weight Loss**

- Initial target: 1-2 pound/week weight loss
- Long-range goal: 7% loss of body weight
- Increase physical activity to at least 150 min/week
- Individualized medical nutrition therapy

Achieving Healthy Eating Habits: *Plate Method*

**Non-starchy vegetables**
- Spinach
- Carrots
- Lettuce
- Greens
- Cabbage
- Green beans
- Broccoli
- Cauliflower
- Tomatoes

**Grains and starchy foods**
- Whole grain breads
- Sweet potatoes
- Corn
- High-fiber

**Protein**
- Chicken/turkey without skin
- Fish (tuna, salmon, cod, catfish)
- Tofu, eggs, low-fat cheese
- Lean beef and pork
- Beans

Technology Tools for Prevention

Technology-assisted tools may be useful elements of effective lifestyle modification to prevent diabetes

- Internet-based social networks
- Distance learning
- DVD-based content
- Mobile applications
- Fitness trackers

American Diabetes Association. Create your plate. Available at: diabetes.org/createyourplate/

Metformin For Prediabetes

Consider metformin therapy for prevention of type 2 diabetes in those with prediabetes, especially for those with

- BMI $\geq$ 35 kg/m$^2$
- Age < 60 years
- Prior gestational diabetes
- Rising A1C despite lifestyle intervention


REFERRAL TO NATIONAL DPP IN VIRGINIA
Refer Patients to Evidence-based Diabetes Prevention Programs

• Use CDC’s registry for programs in Virginia: https://nccd.cdc.gov/DDT_DPRP/Registry.aspx

• DiabetesLocal http://www.diabeteslocal.org/prevention

• Check local YMCA programs

• Have patient check with their employers

• Have patient check with health insurance: Omada Health, Solera Health, Canary Health

CDC Registry

Diabetes Prevention Recognition Program – Registry of Recognized Organizations

Show organizations By Location:

<table>
<thead>
<tr>
<th>State</th>
<th>City</th>
</tr>
</thead>
<tbody>
<tr>
<td>Virginia</td>
<td>Richmond</td>
</tr>
</tbody>
</table>

Search by Organization Name:

Results per page: 50

Name: Enter name here

Search

Recognized Organizations - Richmond

<table>
<thead>
<tr>
<th>Organization</th>
<th>Address</th>
<th>City</th>
<th>State</th>
<th>Zip Code</th>
<th>Phone Num</th>
</tr>
</thead>
<tbody>
<tr>
<td>YMCA of Greater Richmond</td>
<td>2 West Franklin St</td>
<td>Richmond</td>
<td>VA</td>
<td>23220</td>
<td>(804) 474-4448</td>
</tr>
<tr>
<td>Cros Wellness, Inc.</td>
<td>2724 Eurywood Pkwy Suite 103</td>
<td>Richmond</td>
<td>VA</td>
<td>23294</td>
<td>(804) 527-9817</td>
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<tr>
<td>The Balm In Gilead</td>
<td>620 Moorefield Park Dr. Suite 150</td>
<td>Richmond</td>
<td>VA</td>
<td>23236</td>
<td>(804) 644-2250</td>
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</tbody>
</table>

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Bidirectional Referral: Closing Feedback Loop

• National DPPs can close loop in referral process and provide feedback to provider

• Information to provider: Patient enrollment, attendance, % weight loss
  – Internal DPP/Access to EHR
    • Progress documented
    • Patient enrollment & progress at 1-, 6- & 2-month (end)
  – External NDPP to health system/clinic/Non access to EHR
    • Patient enrollment and progress at 12 months (end).
Medicare Reimbursement for DPP

Sites that deliver DPP, including non-healthcare settings with lay DPP coaches (e.g. churches, community centers, organizations) register as Medicare DPP suppliers

Medicare DPP suppliers must be CDC-recognized

Coverage started 04/01/18

Pay-for-performance model

Identify and Treat CV Risk Factors in People with Prediabetes

<table>
<thead>
<tr>
<th>Non-modifiable</th>
<th>Modifiable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>Physical inactivity</td>
</tr>
<tr>
<td>Race/ethnicity</td>
<td>Overweight/obesity</td>
</tr>
<tr>
<td>Gender</td>
<td>Hypertension</td>
</tr>
<tr>
<td>Family history</td>
<td>Smoking</td>
</tr>
<tr>
<td></td>
<td>Abnormal lipid levels</td>
</tr>
</tbody>
</table>

Follow-up Screening/Counseling

- Shown to be important to success
- Provide follow-up screenings for the development of diabetes
  - At least every 12 months for those with prediabetes
  - At least every 3 years if screening is negative
- On a regular basis, search EHR to determine who needs to be screened/rescreened
- Continually screen for modifiable risk factors at each interaction

Evaluating Progress – What to Do

- Assess patient's concerns
- Reconcile their medications and lifestyle
- Revise the management plan as needed
  - If it doesn’t work in the patient’s life, it doesn’t work
- Ask the patient to identify one strategy/goal they would like to accomplish
- Provide information about materials available to achieve goals, such as weight loss or physical activity log
Conclusions

As a member of the healthcare team, *YOU* can make a difference.

- *Only* 11% of people with prediabetes are aware they have it
- Identify those at risk for diabetes:
  - Proactively assess risk and screen/rescreen
  - Assess/advise with management strategies
  - Refer to Diabetes Prevention Program
  - Continually follow-up and evaluate
- Collaborate with other members of the healthcare team

Helpful Resources
Preventing Diabetes in Virginia Strategic Plan

Preventing Diabetes in Virginia Strategic Plan is available on the following websites:

- http://www.virginiadiabetes.org/

Virginia Diabetes Council
www.virginiadiabetes.org

A Partnership for Prevention and Education

By raising awareness, building collaboration, and promoting excellence in education and treatment, Virginia Diabetes Council endeavors to be Virginia’s leading collaborative voice for awareness, education, and treatment.

The Virginia Diabetes Council is a volunteer-led diabetes awareness organization that advocates for diabetes prevention, management, and healthier lifestyle choices for all Virginians.
VDC’s Social Media Campaign to Increase Awareness

- March – April:
  - Central Virginia
  - Hampton Roads
- April – May
  - Eastern Shore
  - Valley
  - Southie
- July – August
  - Southwest VA

ADA’s DPP Charting Platform

- ~15% of ADA’s recognized DSMES programs are also Diabetes Prevention Programs
- ADA can assist your organization in becoming a CDC Recognized DPP provider with our web-based DPP Charting Platform that aligns with the CDC DPP data collection reporting requirements
- ADA conducts free monthly DPP Charting Platform webinars. Register at www.diabetes.org/erpqa

For more information on the DPP Charting Platform contact the ADA at:
erp@diabetes.org or 1.888.232.0822
AMA Efforts to Prevent Diabetes

Goal:
Galvanize efforts to increase screening for prediabetes and raise participation in evidence-based diabetes prevention programs

Approach:
– Engage health systems across the U.S. in diabetes prevention
– Help link clinical practices to diabetes prevention programs
– Develop, test and disseminate relevant tools and resources
– Advocate for inclusion of lifestyle interventions in health benefits

www.preventdiabetesstat.org

Thank You!