Prediabetes & Type 2 Diabetes Prevention
Neena A. Xavier, MD

Disclosures

• Speaker Bureau, Boehringer Ingelheim
Learning Objectives

• Screen patients for prediabetes and type 2 diabetes risk

• Identify and treat modifiable risk factors for cardiovascular disease

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

What is Prediabetes?

Fasting plasma glucose

- Diabetes
- Prediabetes (Impaired fasting glucose)
- Normal

2-h plasma glucose during OGTT

- Diabetes
- Prediabetes (Impaired glucose tolerance)
- Normal

Hemoglobin A1C

- Diabetes
- Prediabetes
- Normal

Any abnormality must be repeated and confirmed on a separate day using the same test.

Diagnosis of diabetes can also be made based on unequivocal symptoms & a random plasma glucose ≥200 mg/dL.

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
Case Study

Introduction

• Mr. N is an Asian male who just turned 45 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, 180 lbs (82 kg); BMI, 26.7 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 ≥25 kg/m² (≥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 ≤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. N 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>
</tr>
</thead>
<tbody>
<tr>
<td>Da Qing(^1,2)</td>
<td>IGT</td>
<td>577</td>
<td>Lifestyle</td>
<td>6 years 23 years</td>
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<tr>
<td>Finnish DPS(^3,4)</td>
<td>IGT</td>
<td>523</td>
<td>Lifestyle</td>
<td>3+ years 7 years</td>
</tr>
<tr>
<td>Diabetes Prevention Program (DPP)(^5,6)</td>
<td>IGT</td>
<td>3,324</td>
<td>Lifestyle</td>
<td>3 years 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)
Refer patients to an intensive behavioral lifestyle intervention program modeled on the Diabetes Prevention Program to:

- 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](http://cdc.gov/prediabetes)

American Diabetes Association

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1. Structured curricula available through CDC
2. DPP Lifestyle Coach training and certification for lay persons and for healthcare personnel who will deliver DPP
3. Intervention delivery method and intensity
   - In-person group or combined with virtual/online
   - Program duration of 12 months minimum
   - Two phases: months 0 – 6 is lifestyle change for weight loss goals; months 7 – 12 is maintenance
   - A minimum of 16 weekly sessions during phase 1 and 6 monthly sessions during phase 2
4. Performance metrics are required to certify a program through CDC.
National DPP

- Build a workforce that can implement the lifestyle change program effectively
- Ensure quality and standardized reporting
- Deliver the lifestyle change program through organizations nationwide
- Increase referrals to and participation in the lifestyle change program

A key part of the National DPP is a lifestyle change program that provides:

- A Trained Lifestyle Coach
- CDC-Approved Curriculum
- Group Support Over the Course of a Year

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

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

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


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

Referrals

• National Diabetes Prevention Program
  [cdc.gov/prediabetes]
• Team-based approach to care
  – Physician
  – Nurse practitioner/physician assistant
  – Certified diabetes educator
  – Registered dietitian
  – Pharmacist
  – Exercise physiologist
  – Social worker/psychologist


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>
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<tr>
<td>Family history</td>
<td>Smoking</td>
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<tr>
<td></td>
<td>Abnormal lipid levels</td>
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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

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
Thank You!