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- University at Albany School of Public Health
- NYS Department of Health
  - Bureau of Community Chronic Disease Prevention

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Prediabetes: How Healthcare Providers Can Take Action

January 15, 2015

Objectives

- Describe the burden of prediabetes and Type 2 diabetes in NYS
- Explain how to diagnose prediabetes
- Explain why diagnosing prediabetes is a critical step in preventing Type 2 diabetes
- Identify actions to treat prediabetes
Obesity Epidemic

Prevalence of Self-Reported Obesity
Non-Hispanic White Adults
- Data not reported
- 15%–<20%
- 20%–<25%
- 25%–<30%
- 30%–<35%
- ≥35%
BRFSS 2011-2013

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BRFSS 2011-2013

Age Adjusted Prevalence of Obesity & Diagnosed Diabetes-U.S. Adults ≥18 Years

1994

2000

Age Adjusted Prevalence of Obesity & Diagnosed Diabetes-U.S. Adults ≥18 Years
Age Adjusted Prevalence of Obesity & Diagnosed Diabetes-U.S Adults ≥18 Years

Obesity (BMI ≥30 kg/m²) Diabetes 2010

- 29.1 million people (9.3%) in the U.S. have diabetes
- An estimated 1.5 million NYS adults (10.4%) have diabetes
- An estimated 760,000 have diabetes but don’t know it

Diabetes Epidemic

- Prevalence Data from 2012 NYS BRFSS

<table>
<thead>
<tr>
<th></th>
<th>% (CI)</th>
<th>Est. # of NY Adults</th>
</tr>
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<tbody>
<tr>
<td>Diagnosed Diabetes</td>
<td>9.7% (8.7-10.8)</td>
<td>1.5 million</td>
</tr>
<tr>
<td>Diagnosed Prediabetes</td>
<td>7.5% (6.5-8.6)</td>
<td>971,000</td>
</tr>
</tbody>
</table>

Cost of Diabetes - U.S.

- In the US in 2012 = $245 billion ($176 billion in direct costs)
- 11% of health care dollars
- Growing epidemic

Cost Data - NYS Medicaid

- 2011 Medicaid spending for people with diabetes
  - Nearly $10 Billion
  - Includes all health care services
- Only 12% of Medicaid beneficiaries have only diabetes
  - 60% have 2 chronic health conditions
  - 28% have 2 or more chronic health conditions

Patient Profile: “AR”

- 66 year old female with Type 2 Diabetes for 15 years
- Multiple daily injections of insulin - 100 units of glargine and lispro (25 units) before each meal
- A1C is 12.0%
- Proliferative retinopathy, hypertension, neuropathy and cardiovascular disease
- Almost impossible to effectively treat
A Pipeline of Disease and Escalating Costs

- 86 million US adults - 37% of all US adults
- 25 - 30% (4.5 million) of NYS adults; only 7.5% of these adults report being diagnosed
- Increases risk for developing type 2 diabetes, early heart disease and stroke
- Without lifestyle changes, 15-30% of individuals with prediabetes will develop type 2 diabetes within 5-10 years

Prediabetes Epidemic

Heed the Warning…….

What is Prediabetes?

- Fasting Plasma Glucose
- 2-hour Plasma Glucose on OGTT
- Hemoglobin AIC

Impaired Glucose Tolerance Precedes Type 2 Diagnosis

The Window of Opportunity
Screening for Prediabetes

Diagnosis important because:
- Type 2 diabetes is serious and costly
- Asymptomatic phase (prediabetes) is not benign; early complications may be developing
- Early treatment reduces long term complications

Who to Screen in Asymptomatic Adult Individuals?

**RISK FACTORS**
- Physical inactivity
- First-degree relative with diabetes
- High-risk race/ethnicity
- Women who delivered a baby weighing >9 lb or were diagnosed with GDM
- Hypertension (≥140/90 mmHg or on therapy for hypertension)

Who to Screen in Asymptomatic Adult Individuals?

**RISK FACTORS**
- HDL-C <35 mg/dL and/or TG >250 mg/dL
- A1C ≥5.7%, IGT, or IFG on previous testing
- Other clinical conditions associated with insulin resistance: severe obesity, acanthosis nigricans, PCOS
- History of CVD

Who to Screen in Asymptomatic Adult Individuals?

- All adults with BMI ≥25 kg/m² and additional risk factors
- If no risk factors: no later than age 45 years
- If normal results: repeat testing (screening) at ≥3-year intervals
- Screen more frequently depending on initial test results and risk factors
- Test yearly if prediabetes

Gestational Diabetes

- Women are much more likely to get type 2 diabetes later if they have gestational diabetes – 5%–10% immediately after pregnancy
- 35%–60% within 10–20 years
- Opportunity for action

How Do We Screen?

**Tests**
- A1C
- Fasting Plasma Glucose
- Oral Glucose Tolerance Test – gold standard, most sensitive, least convenient

**Diagnoses**
- Impaired Fasting Glucose
  - IFG: 100–125 mg/dl
- Impaired Glucose Tolerance
  - IGT: 2 hr pg 75-g Oral Glucose Tolerance Test 140–199 mg/dl
- A1C  5.7 – 6.4%
Screening & Diagnosing Prediabetes

<table>
<thead>
<tr>
<th></th>
<th>Normal</th>
<th>Prediabetes</th>
<th>Diabetes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fasting Glucose</td>
<td>&lt;100 mg/dL (&lt;5.5 mmol/L)</td>
<td>100-125 mg/dL (5.5-6.9 mmol/L)</td>
<td>≥126 mg/dL (7 mmol/L)</td>
</tr>
<tr>
<td>Post-challenge glucose (2 hours after 75g glucose intake)</td>
<td>&lt;140 mg/dL (&lt;7.7 mmol/L)</td>
<td>140-199 mg/dL (7.8-11 mmol/L)</td>
<td>≥200 mg/dL (11 mmol/L)</td>
</tr>
<tr>
<td>A1C</td>
<td>≤5.6%</td>
<td>5.6% to 6.4%</td>
<td>≥6.5%</td>
</tr>
</tbody>
</table>

ICD-9 Codes for Prediabetes Testing

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>790.21</td>
<td>Impaired fasting glucose/ Has yet to be diagnosed with diabetes</td>
</tr>
<tr>
<td>790.22</td>
<td>Failed glucose tolerance test/ Has not been diagnosed with diabetes</td>
</tr>
<tr>
<td>790.29</td>
<td>Evidence of other impairment of glucose metabolism/</td>
</tr>
<tr>
<td></td>
<td>- Has not been diagnosed with diabetes</td>
</tr>
<tr>
<td></td>
<td>- Make sure abnormal glucose levels have been documented when using this code</td>
</tr>
<tr>
<td>277.7</td>
<td>3 of the 5 components of cardiometabolic syndrome (e.g., obese, hypertension, elevated triglycerides)/Must report which manifestation of the cardiometabolic syndrome the patient has</td>
</tr>
</tbody>
</table>

How Do We Treat Prediabetes?

- Lifestyle interventions
  - Lose 5% to 7% of body weight (10-14 lbs/200-pound person)
  - At least 150 minutes/week physical activity
- Metformin and other medications

Prevention Trials: Diabetes Prevention Program

- Reduced type 2 diabetes by 58% and 71% in those over aged 60
- Consistent for all participating ethnic groups & both men and women
- Blood pressure and lipids improved
- Ten-year follow-up - continued reduction in new cases of type 2 diabetes

Translational Studies

- Trained lay health workers as effective in delivering lifestyle change program as health professionals

The Power to Prevent Diabetes Prevention Programs

YOU CAN TAKE CONTROL REDUCE YOUR RISK TODAY
National Diabetes Prevention Program

CDC Recognized Program Sites

Quality and Technical Assistance Center NY

- Evidence-based disease prevention & self-management programs

877-496-2780
QTAC@albany.edu
qtac.ny.org

Pharmacologic Treatments for Prediabetes

- Benefits MUST outweigh any side-effects or risks
- Expense
- None are FDA-approved

Pharmacologic Treatments for Prediabetes

<table>
<thead>
<tr>
<th>Agent</th>
<th>Study</th>
<th>RRR</th>
<th>Side-effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metformin</td>
<td>Da Qing, Finnish, DPP</td>
<td>28%</td>
<td>GI</td>
</tr>
<tr>
<td>Acarbose</td>
<td>STOP-NIDDM</td>
<td>25%</td>
<td>GI, poor compliance</td>
</tr>
<tr>
<td>Rosiglitazone</td>
<td>DREAM</td>
<td>62%</td>
<td>Bone loss, edema, CHF</td>
</tr>
<tr>
<td>Orlistat</td>
<td>XENDOS</td>
<td>52-62%</td>
<td>GI, poor compliance</td>
</tr>
</tbody>
</table>

Proven Pharmacologic Interventions

<table>
<thead>
<tr>
<th>Interventions Proven to Delay or Prevent T2DM</th>
<th>Rate of Conversion to Normal Glucose Tolerance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metformin (2 trials)</td>
<td>26%-31%</td>
</tr>
<tr>
<td>Acarbose (1 trial)</td>
<td>25%</td>
</tr>
<tr>
<td>Pioglitazone (1 trial)</td>
<td>48%</td>
</tr>
</tbody>
</table>

What Can Healthcare Providers Do?

- Make early screening to identify prediabetes ROUTINE!
- Treat to A1C less than 5.7
- Be a messenger about the power of prevention
- Make referrals to the National Diabetes Prevention Program
Prediabetes - Process for Diagnosing

S  Screen
A  Assess and Advise
F  Follow-up
E  Evaluate progress

Communicating Risk and Messages for Action

- What is the name of the condition?
- What is the risk?
- What can patients do? What can MDs do?
- No diagnosis = No intervention = No follow up

Patient Profile: AR 20 years earlier...

What action could we have taken?
- A1C 6.2…
- No eye, kidney or nerve disease…
- 30 lbs lighter…
- Decreased CVD risk
- Decreased stroke risk
- Improved quality of life
- Less costly

New York State Prediabetes Campaign

2 Million Aware by 2017
- Prediabetes Toolkit for academic detailing
- www.prediabetesNY.org

For more information:
Submit questions for the NYS DOH to:
ManageyourhealthNY@health.ny.gov

Contact QTAC at:
877-496-2780   QTAC@Albany.edu
QTACNY.org
Evaluations

Nursing Contact Hours, CME and CHES credits are available

Please visit www.phlive.org to fill out your evaluation and complete the post-test

Thank you!