

Prediabetes: A Woman's Perspective

AMERICAN COLLEGE OF ENDOCRINOLOGY
CONSENSUS STATEMENT ON THE DIAGNOSIS AND
MANAGEMENT OF PRE-DIABETES IN THE CONTINUUM
OF HYPERGLYCEMIA



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What is Prediabetes?

Prediabetes basically refers to an intermediate stage between completely normal glucose levels and the clinical entity of type 2 diabetes.

Prediabetes

- **Statistics**

- 1 in 4 adults – 57 million
- Only 4% are aware
- Diabetes costs - \$714 billion/year
- Prediabetes costs - \$25 billion/year

Prediabetes Issues

- Guidelines
- Differences in opinion
- “When do the risks of diabetes begin?”
- “What can we do to prevent diabetes?”
- “What strategies are necessary to reduce complications related to diabetes?”
- “Costs of prevention for our society?”

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American College of Endocrinology & the American Association of Clinical Endocrinologists

- Consensus conference July 23, 2008
- Published in Diabetes Care, October 2008
- Two pronged approach:
 - 1) Intensive lifestyle management to prevent the progression to type 2 diabetes
 - 2) Prevent the development of cardiovascular complications; and help those patients where lifestyle modifications have been insufficient to modify cardiovascular risk factors

Diagnosis of Prediabetes

- **Normal:**

- Normal fasting: below 100 mg/dL
 - After 8 hour fast overnight
- Normal post–challenge: <140 mg/dL
 - 75g oral glucose after overnight fast

Diagnosis of Prediabetes

- **Prediabetes:**

- Fasting: 100 to 125 mg/dL
 - Impaired fasting glucose
- 2 hour post-challenge: 140 to 199 mg/dL
 - Impaired glucose tolerance

- **Diagnostic for Diabetes:**

- Fasting >126 mg/dL
- Post-challenge >200 mg/dL

Prediabetes: Future-Based Risk Predictions

- Gestational diabetes
- Offspring of parents with type II DM
- Individuals with abdominal adiposity
- Cardiovascular disease
- Metabolic syndrome (NCEP criteria)

Metabolic Syndrome

- 50-60 million Americans have syndrome of insulin resistance
- Need to have 3 of 5 parameters:
 - FBS 100 -126 (IFG)
 - BP >130/80
- Triglyceride >150mg/dl
- HDL <40 ♂, <50 ♀
- Obesity with abnormal girth >35" ♀, >40" ♂

Why Treat Prediabetes?

- 5-15 times more likely to develop diabetes than someone without it
- Substantially increased risk of cardiovascular disease and death with linear relationship with 2hr glucose levels
- Increased risk of diabetic retinopathy (7.9% of IGT patients in DPP trial)

Progression of Prediabetes to Diabetes

- Occurs over many years before onset of hyperglycemia is discovered
- Greater chance of conversion if IGT and IFG are both abnormal
- Risk depends on degree of insulin resistance and deficiency as well as other diabetic risk factors
- Average risk 0.7% per year if not prediabetic
- 5-10% chance per year if prediabetic
- Over a lifetime, majority of patients with prediabetes will develop diabetes if no intervention

Goals and Treatment in Prediabetes

- Intensive lifestyle management as a goal to lower insulin resistance and improve functional ability of islet cells
 - Weight reduction by 5 -10%
 - 60-65% of the U.S. population is obese

Intensive Lifestyle Management: Exercise

- Regular moderate-intensity physical activity
 - 30 – 60 minutes/day, at least 5 days/week
- Exercise can help lower blood glucose levels, reduce blood pressure, improve lipid profile, reduce insulin needs
- Can contribute 20% of weight loss
- Improvement in energy level, muscle strength, flexibility and quality of life

Intensive Lifestyle Management: Diet

- Healthy alternatives to foods eaten
- Read labels for content – especially if sugar is one of the top 3 ingredients
- Avoid prepackaged, ready to eat, fast food
- Be wary of artificial sweetener
- Avoid bad fat, not all fat
- Respect cultural differences and socioeconomic variability

Intensive Lifestyle Management

- Multidisciplinary approach
 - Involve the patients and families, physicians, nutritionists, nursing
- Encourage patient to exercise
 - Walking is adequate
 - Parking lot location
 - Stairs vs elevators
- Promote alternatives to television
 - Television often equals snacking
- Approach weight issue with sensitivity
- Review all medications, including OTC and alternative medicines

Goals and Treatment in Prediabetes

- No pharmacologic therapies approved by FDA:
For patients at increased RISK for DM:
 - Combination of IFG, IGT, metabolic syndrome, worsening glycemia, CV disease, fatty liver, history of gestational diabetes, Polycystic Ovary Syndrome
 - Pharmacologic glycemetic treatment MAY be considered:
 - Metformin & Acarbose are acceptable
 - TZD not recommended → safety concerns (CHF, fracture)

Pharmacologic Therapy for Prediabetes

- Does medication delay progression of prediabetes or mask diagnosis of diabetes
- Has been demonstrated (DPP) to reduce progression to diabetes by 31%
- Other study states no benefit of medication over lifestyle intervention
- Metformin most studied drug; recommended for certain groups of patients
- Acarbose can reduce risk of progression by 25% but only while actually on the drug
- Glitazones show decreased progression of disease but with significant side effect profile and cost

Goals and Treatment in Prediabetes

- Lipids: (same as those with DM)
 - Statin therapy:
 - LDL → 100 mg/dL
 - Non-HDL cholesterol → 130 mg/dL
 - ApoB treatment → 90 mg/dL
- BP: (same as those with DM)
 - SBP <130 & DBP <80
 - ACE/ARB → first line & Calcium Channel Blocker as 2nd line treatment
 - Caution with Thiazides, Beta Blockers

Goals and Treatment in Prediabetes

- Antiplatelet therapy: Aspirin for all (no bleed risk)
- Medical weight loss strategies:
 - Orlistat
 - Sibutramine
 - Cannabinoid receptor antagonists
- Bariatric Surgery
 - Morbid obesity

Monitoring for Prediabetes

- Yearly:
 - Annual glucose tolerance test
 - Microalbuminuria
- Twice a year at least:
 - FPG
 - A1C
 - Lipids
- If worsening then intensify lifestyle and pharmacotherapy

ADA Issues Testing Criteria (1)

The American Diabetes Association issued new guidelines earlier this year for health plans and doctors to test patients who may be at risk for prediabetes.

They are:

1. Testing should be considered in all adults who are overweight (body mass index >25 kg/m²) and have any of these additional risk factors:
 - Physical inactivity
 - First-degree relative with diabetes
 - Members of a high-risk ethnic population (e.g., African American, Latino, Native American, Asian American, and Pacific Islander)

ADA Issues Testing Criteria (2)

- Women who delivered a baby weighing >9 lb or diagnosed with gestational diabetes
- Hypertension (>140/90 mm Hg 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 ovarian syndrome
- Impaired glucose tolerance or impaired fasting glucose on previous testing

ADA Issues Testing Criteria (3)

- Other clinical conditions associated with insulin resistance (e.g., severe obesity and acanthosis nigricans)
 - History of cardiovascular disease
2. In the absence of these risk factors, testing for prediabetes and diabetes should begin at age 45
 3. If results are normal, testing should be repeated at least at three-year intervals, with consideration of more frequent testing depending on initial results and risk status

ACE and AACE Recommend Treatment Plan for Prediabetes

- A panel convened by the American College of Endocrinology and the American Association of Clinical Endocrinologists developed recommendations for treating prediabetes. Among them:
- Fasting plasma glucose, hemoglobin A1c and lipids should be checked every six months
- Intensive lifestyle management should be started, including reducing weight by 5 percent to 10 percent and beginning a program of regular, moderately intense physical activity of 30 to 60 minutes at least five days a week

ACE and AACE Recommend Treatment Plan for Prediabetes

- Drug treatment may be considered for those at particularly high risk. Metformin and acarbose were recommended as both inexpensive and safe
- Lipid targets are the same as for diabetic patients (LDL levels of 100 mg/dL), and statins are recommended
- Blood pressure targets also are the same as for diabetic patients (systolic blood pressure less than 130 mm Hg and diastolic of 80 mm Hg), and ACE inhibitors and angiotensin receptor blockers are considered first-line agents

Source: "Consensus Statement on the Diagnosis and Management of Pre-Diabetes in the Continuum of Hyperglycemia," American College of Endocrinology and American Association of Clinical Endocrinologists, July 23, 2008

CHALLENGES

- Patients are completely asymptomatic
- Cost-effectiveness
- Motivation
- More research needed

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