THE IMPORTANCE OF IDENTIFYING AND TREATING PREDIABETES

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DIABETES BURDEN

- Numbers are large and increasing
  - Diagnosed Diabetes 21.0 M (9.3%)
  - Undiagnosed Diabetes 8.1M
  - Prediabetes 86 M people in US!

- Costs
  - To the Individual – medicines, testing, medical visits
  - To health payers - $176 B + 69 B indirect
  - To society – Dollar costs plus loss of productivity plus disability plus burden of care

WHO IS AT RISK FOR DIABETES?

• Abnormal glucose readings
  • Rising glucose readings
• Overweight
• Gestational diabetes
• Polycystic Ovary Syndrome
• Family history of diabetes

• Risk calculators
  • http://www.cdc.gov/diabetes/basics/prediabetes.html
  • http://www.diabetes.org/are-you-at-risk/diabetes-risk-test/
WHAT CAN BE DONE?

• Diabetes Prevention is Possible
  • 1) Identify those at risk – systematic screening, or otherwise
  • 2) Apply an effective and durable intervention
    • Lifestyle
    • Metformin
    • Others
    • Weight loss surgery & medications
    • Other diabetes medications
DPP PRIMARY GOAL

Can we prevent or delay the development of type 2 diabetes in persons at high risk?
DPP Development of Diabetes

- Placebo (n=1082)
- Metformin (n=1073, p<0.001 vs. Placebo)
- Lifestyle (n=1079, p<0.001 vs. Metformin, p<0.001 vs. Placebo)

31% by metformin
58% by lifestyle
KEYS TO DPP LIFESTYLE SUCCESS

• Weight loss was the key to diabetes prevention
  • Each 1 kg (2.2 lbs) of weight loss was associated with a 16% reduction in risk for developing diabetes
• Reduction of total calories, especially fat calories
• Achieving 150 minutes of activity each week
Long-term Diabetes Prevention 1996-2013

Approximately one-half of DPP participants have not developed diabetes during the entire study.
CVD RISK FACTOR IMPROVEMENT

![Graphs showing changes in CVD risk factors over time with Placebo, Metformin, and Lifestyle interventions.](image)
DPPOS RESULTS

Microvascular

Graph showing the aggregate microvascular disease prevalence (%) for different groups:
- Men
- Women
- No diabetes
- Diabetes

Comparing Placebo, Metformin, and Lifestyle intervention groups.

* Indicates significant difference.
BROAD SPECTRUM HEALTH BENEFITS (DPPOS)

• Participants in all three treatment groups have shown decreases in blood pressure, cholesterol, and triglycerides.

• Lifestyle participants have had lower blood pressure and lipid levels than other participants, while taking fewer medications.

• Metformin participants are using the least amount of diabetic medication (other than study drug).
Major Findings

• Original interventions continue to have an effect on diabetes development- 16 years later

• Risk factors for heart disease reduced in all groups (Lifestyle more than Metformin)

• Diabetes prevention/delay reduced development of complications (kidney, nerve, eye)

• Individual interventions (Lifestyle and Metformin compared to Placebo) did not have significantly different effects on complications
INTERVENTIONS FOR PREVENTING DIABETES PROVIDE GOOD VALUE FOR MONEY AND SHOULD BE BROADLY ADOPTED AND WIDELY IMPLEMENTED.

MEDICARE AGREED IN 2016 TO COVER DPP-STYLE DIABETES PREVENTION WITH LIFESTYLE PROGRAMS.
WHAT’S NEXT?
DPPOS FOLLOW-UP

Primary Goals

We have accomplished much already.
Further important questions remain:

• What is the effect of long-term metformin and lifestyle begun during the pre-diabetes phase, on heart disease and cancer?

• What is the long-term clinical course of “pre-diabetes” and new onset diabetes (of known duration)?
VENUES FOR DIABETES PREVENTION

• CDC-sponsored nationwide DPP implementation
  • http://www.cdc.gov/diabetes/prevention/index.html
• Local YMCA (YDPP)
• Eskenazi Healthy Me program
• Weight Watchers DPP experiment
• Diabetes Educators/Dietitians can help guide a customized program
• Research Programs
  • RISE study Indianapolis is ongoing
  • www.clinicaltrials.gov
Compared to the placebo intervention:
• The lifestyle intervention cost ~$1,700 more per person over 10 years but substantially improved quality-of-life “cost-effective”
• The metformin intervention cost ~$100 less per person over 10 years and marginally improved quality-of-life “cost-saving”