DIABETES PREVENTION: the WEIGHT is over!
What you need to KNOW about DIET

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Things to consider

- Success in the Diabetes Prevention Program, the long-term follow-up of those participants, and the Look AHEAD program.
- Dietary strategies for weight control and maintenance: what is proven to work?
- Diet tips to avoid diabetes or to follow if you are diabetic!
Diabetes Prevention Program (DPP) Study Design

- 4000 subjects at 25 centers (~170/site); 3-year enrollment
- Subjects followed for 3-6 years
- Medication groups for double blind, placebo controlled study; separate lifestyle group
- Adequate design to detect 33% reduction in progression to diabetes (assuming a 7.5% annual progression rate)
Diabetes Prevention Program Lifestyle Intervention Arm

- An intensive program with the following specific goals:
  - ≥ 7% loss of body weight and maintenance of weight loss
  - Dietary fat goal: <25% of energy from fat
  - Calorie intake goal: 1200-1800 kcal/day
  - ≥ 150 minutes per week of physical activity
DPP Intensive Lifestyle Intervention Methods

- Training in diet, exercise, and behavior modification
- Low-fat, low-calorie diet
- 16-session core curriculum (over 24 weeks)
- Maintenance phase—minimum of monthly contact
- Exercise session at the center 2x/week
Diabetes Prevention Program
Interventions

**Intensive Lifestyle Goals**

- Reduction of fat and calorie intake
- Physical activity at least 150 minutes/week
- Achieve and maintain at least 7% weight loss

**Metformin Goals**

- Metformin 850 mg twice daily
The DPP Research Group, *NEJM* 346:393-403, 2002
DPP: Progression to Diabetes

All participants

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

Risk reduction:
- 31% by metformin
- 58% by lifestyle

Cumulative incidence (%) vs. Years from randomization

Placebo (n=1082)

Metformin (n=1073, p<0.001 vs. Plac)

Lifestyle (n=1079, p<0.001 vs. Met, p<0.001 vs. Plac)
**Positive Effects of Weight Loss on Type 2 Diabetes**

- Modest weight loss of 5% yields significant results

Potential Lifetime Impact for Pre-Diabetes Lifestyle Intervention

**Macrovascular**
- Stroke: ↓ 9%
- Coronary Heart Disease: ↓ 8%

**Microvascular**
- Blindness: ↓ 39%
- End Stage Renal Disease: ↓ 38%
- Amputations: ↓ 35%

*Life Expectancy: Increase by 0.5 Years*

Aroda VR, Ratner R. JCEM 93(9):3259-65, 2008
The DPPOS reports:

- In 10 years, participants in the lifestyle change group delayed type 2 diabetes by about 4 years compared with placebo, and those in the metformin group delayed it by 2 years.
- The benefits of intensive lifestyle change were especially pronounced in the elderly.
- People aged 60 and older lowered their rate of developing type 2 diabetes in the next 10 years by about half.
Look AHEAD (Action for Health in Diabetes) Trial

• Multicenter trial of 5,145 individuals with type 2 diabetes
  • Intensive lifestyle intervention (ILI) caloric restriction, minimum weight loss goal of 7%, & physical activity goal 175 min/wk versus diabetes support & education (DSE) sessions
    • Wt loss: 8.6% (ILI) vs 0.7% (DSE)
    • Mean fitness ↑: 20.9% (ILI) vs 5.8% (DSE)
    • HbA1c ↓: 7.3 to 6.6% (ILI) vs 7.3 to 7.2% (DSE)
    • BP, TG, HDL all improved significantly in ILI vs DSE

Dietary Strategies in Look AHEAD

- Diet was based on current ADA recommendations for <30% of calories from fat & <10% from sat fat
- Calorie and fat targets given to each participant
  - For those weighing 250 lbs or less: 1200-1500 kcals
  - For those weighing over 250 lbs: 1500-1800 kcals
- Self monitoring of foods eaten, portions, calories, and fat grams
- Meal replacements: 2/day recommended, and 1/day encouraged after the first 4 months
Dietary Strategies in Look AHEAD

- Healthy, balanced meals, plenty of fruits and vegetables and healthy cooking techniques encouraged
- Structured meal plans also given to help with reaching calorie goals
- Discussed eating out and making good choices
- Calorie density covered in second 6 months (volumetrics)
## Successful weight loss strategies:

<table>
<thead>
<tr>
<th><strong>Strategy</strong></th>
<th><strong>Target</strong></th>
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<tbody>
<tr>
<td>↓ total dietary calories</td>
<td>↓ portion sizes</td>
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<tr>
<td>↓ total fat intake</td>
<td>↓ fried foods</td>
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<tr>
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<td>↓ fats, both in cooking and at table</td>
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Most difficult issues in keeping a healthy weight

- **Maintenance** of weight loss
- **Continued use of self-monitoring** of dietary intake
- **Weighing** oneself regularly
- **Continuing behaviors** that enabled initial success (examples: motivation, time management, etc.)
Food Behaviors of Successful Long-term Weight Management: National Weight Control Registry Data

- Self-monitoring:
  - Diet: record food intake daily, limit certain foods or food quantity
  - Weight: check body weight ≥1 x/wk
- Low-calorie, low-fat diet:
  - Total energy intake: 1300-1400 kcal/d
  - Energy intake from fat: 20%-25%
- Eat breakfast daily
- Regular physical activity: 2500-3000 kcal/wk (eg, walk 4 miles/d)

Making Healthy Food Choices to Prevent Diabetes (healthy for DM)

- Watch those CALORIES! Eating too much of even healthy foods can result in weight gain. Watch your portion sizes. Keep your eyes on the Nutrition Facts Label when buying and choosing your foods.

- Eat lots of vegetables and fruits. **Focus on color variety** to maximize health benefits.
Making Healthy Food Choices to Prevent Diabetes (healthy for DM)

- Have **non-starchy vegetables** such as spinach, carrots, broccoli or green beans with meals. Health benefits are highest with raw or steamed vegetables, so don’t overcook vegetables.
- Choose **whole grain foods** over refined grains. Transition gradually to brown rice or whole wheat pasta.
Making Healthy Food Choices to Prevent Diabetes (healthy for DM)

- Include **dried beans** (like kidney or pinto beans) in your meals. Red beans and brown rice can become a tradition.
- Include **fish** 2-3 times a week.
- Make your **meat choices lean**, such as sirloin or pork loin. Remove the skin from chicken and turkey.
Making Healthy Food Choices to Prevent Diabetes (healthy for DM)

- Consume **non-fat dairy**: skim milk, non-fat yogurt and non-fat cheese. If you don’t like these choices, then choose the low-fat dairy versions.
- **Avoid sweetened drinks**, opting for water and calorie-free "diet" drinks instead.
Making Healthy Food Choices to Prevent Diabetes (healthy for DM)

- Choose liquid oils instead of solid fats that can be high in saturated and trans fats, both for cooking and at the table. Remember that fats are high in calories. If you're trying to lose weight, watch your portion sizes of added fats. The Nutrition Facts Label is a great help here.
- Cut back on high calorie snack foods and desserts.
And, yes, you can have that favorite food you like.
You just can’t have it every day and you can’t have a lot of it.
Work it into your diet plan and... write it down!!!!
MERCI BEAUCOUP