Behavioral Strategies in Obesity Management

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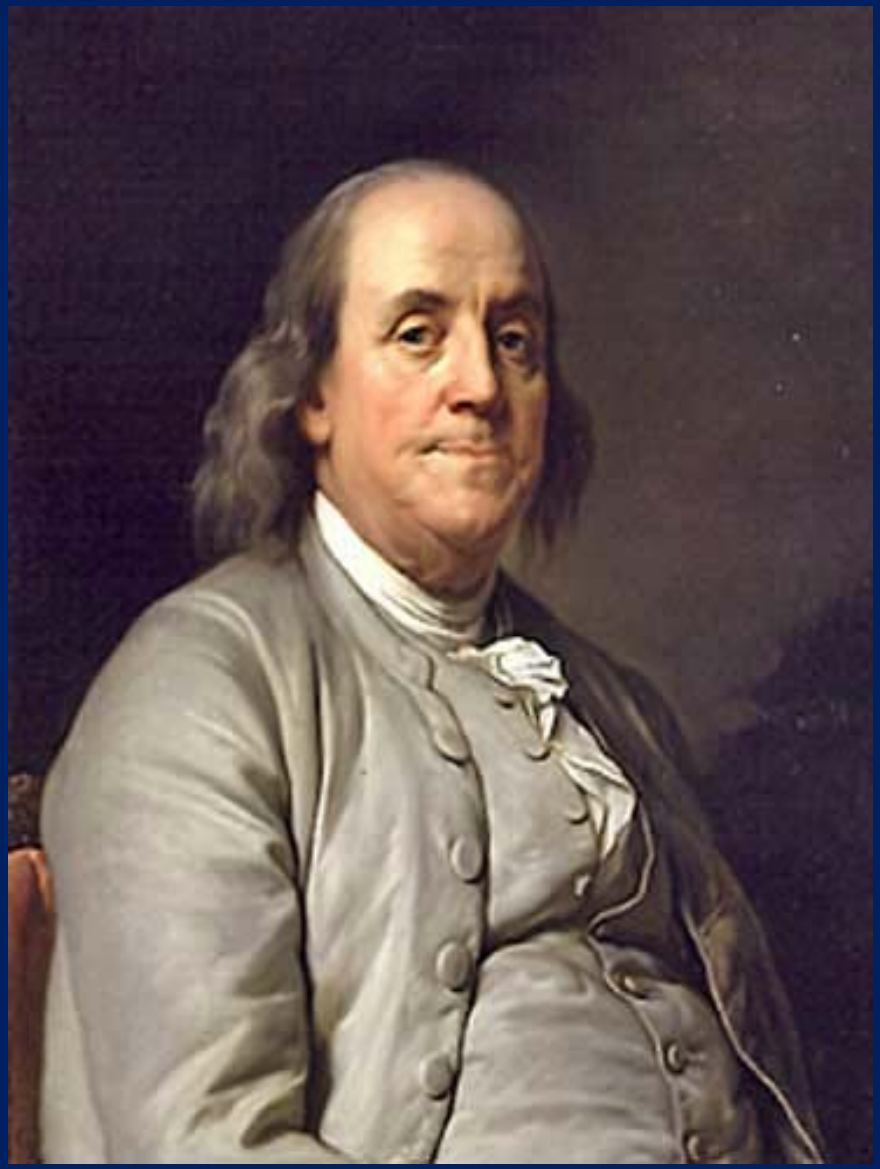
Overview of Presentation

- Behavioral treatment for obesity
- Diabetes Prevention Program
- Improving induction and maintenance of weight loss
- Look AHEAD study
- Options for disseminating lifestyle modification



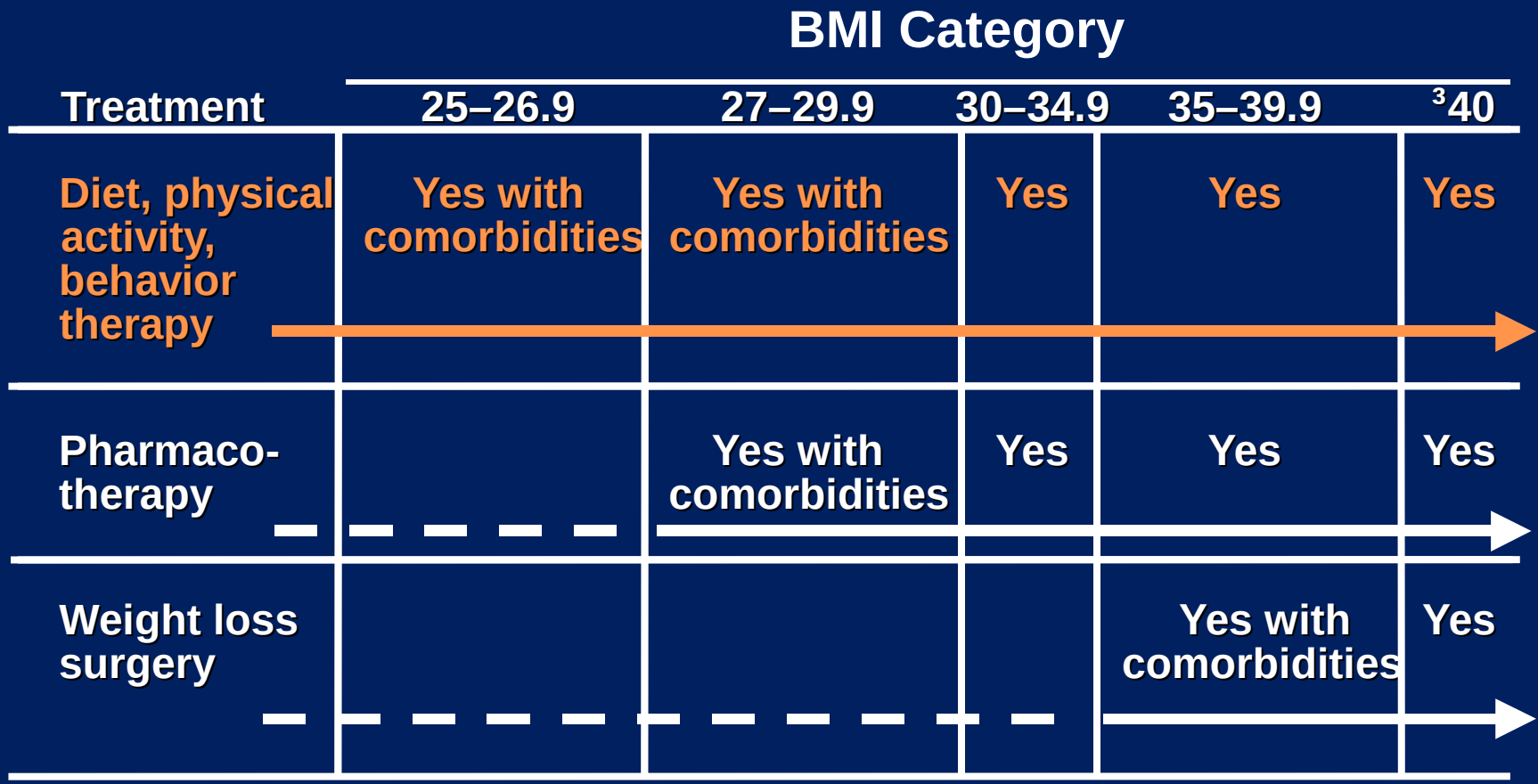
BMI = 32 kg/m^2

Goals of Weight Management: a 10% Loss of Initial Weight

"Sustained weight loss of 3% - 5% is likely to result in clinically meaningful reductions in triglycerides, blood glucose, HbA_{1c} and the risk of developing type 2 diabetes." "…greater loss produces greater benefits."

Jensen et al. Circulation. 2014;129(25 Suppl 2):S102-38.

A Guide to Selecting Treatment: NIH Guidelines*



Yes*alone indicates that the treatment is indicated regardless of the presence or absence of comorbidities. The solid arrow signifies the point at which therapy is initiated

The Practical Guide: Identification, Evaluation, and Treatment of Overweight and Obesity in Adults. NIH/NHLBI/NAASO; October 2000. NIH publication No. 00-4084.

U.S. Preventive Services Task Force (USPSTF)

- "The USPSTF recommends screening all adults for obesity. Clinicians should offer or refer patients with a body mass index (BMI) of 30 kg/m^2 or higher to intensive, multicomponent interventions."
  - Moderate intensity = monthly contact
  - High intensity = more frequent
  - Low intensity = less frequent
- This is a grade B recommendation.

*There is high certainty that the net benefit is moderate or there is moderate certainty that the net benefit is moderate or substantial.

Moyer et al. Ann Intern Med 2012;157:373-79.

Lifestyle Modification for Obesity

- Consists of a set of principles and techniques to modify eating and activity habits
- New habits can be learned in same manner as a sport or musical instrument
- Treatment examines antecedents, behaviors and consequences (ABCs) associated with eating and activity

Brownell. Learn Program for Weight Control, 1998.

A Sample Behavior Chain

Brownell KD. The LEARN Program for Weight Control 7th ed. American Health Publishing Co.;1997.

Identify Eating Habits by Self-Monitoring

- Types of foods
- Portion sizes
- Calories (reduce by 500-750 kcal/d)
- Times, places, and activities
- Thoughts and moods

Brownell. Learn Program for Weight Control. 1998

Comprehensive Lifestyle Intervention

- Patients who need to lose weight should receive a comprehensive lifestyle intervention (diet, physical activity, and behavior modification) of 6 months or longer.

- Reduced calorie diet: ≥ 500 kcal/d deficit
- Physical activity: typically aerobic, ≥ 150 min/week
- Behavior therapy: structured behavior change program that includes monitoring food intake, activity, and weight, with regular feedback from trained interventionist

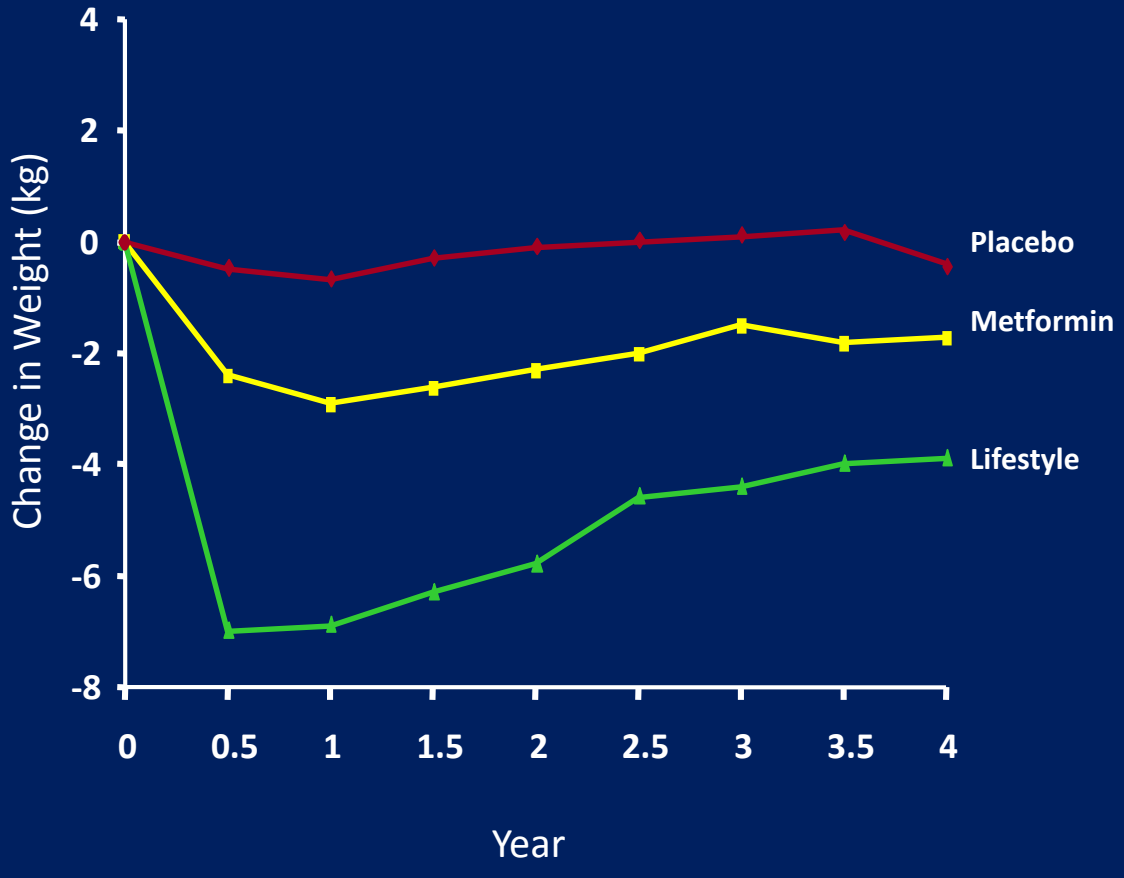
Jensen et al. Circulation. 2014;129(25 Suppl 2):S102-38.

Expert Panel's Recommendation for Losing 5-10% of Initial Weight

- "Advise overweight and obese individuals…to participate for ≥ 6 months in a comprehensive lifestyle program…" (Recommendation: A)
- "Prescribe on-site, high intensity (i.e., ≥ 14 sessions in 6 months) comprehensive weight loss interventions provided in individual or group sessions by a trained interventionist." (Recommendation: A)
- Comprehensive interventions "… produce average weight losses of up to 8 kg in 6 months of frequent (initially weekly) on-site treatment provided by a trained interventionist…" (Strength of Evidence: High)

Jensen et al. Circulation. 2014;129(25 Suppl 2):S102-38.

DPP: Treatment Interventions and Weight Loss



COMPREHENSIVE LIFESTYLE MODIFICATION PROGRAM

Weight Loss Induction:
16 individual visits over 6 months

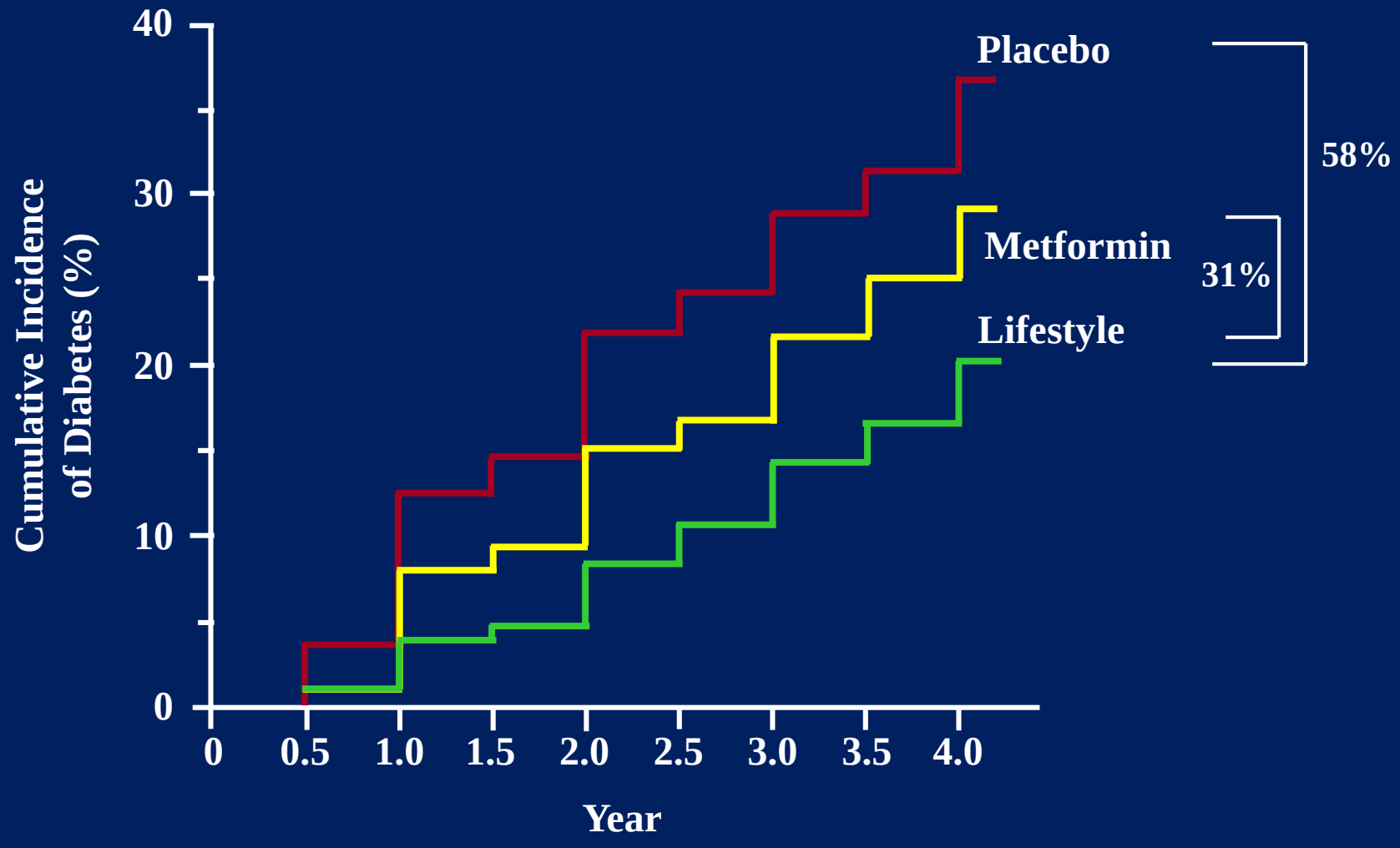
Diet: Low-fat diet, conventional foods (1200-1800 kcal/d)

Activity: ≥ 150 minutes/week of moderate intensity exercise

Weight Maintenance: Individual visits at least every 2 months.
-Three group classes/year for 4-6 weeks (campaigns)
-Toolbox

Diabetes Prevention Program Research Group. N Engl J Med 2002;346:393-403

Diabetes Prevention Program



Diabetes Prevention Program Research Group. N Engl J Med. 2002;346:393-403

Treatment Factors Improving Weight Loss in Behavioral Interventions

Induction of Weight Loss

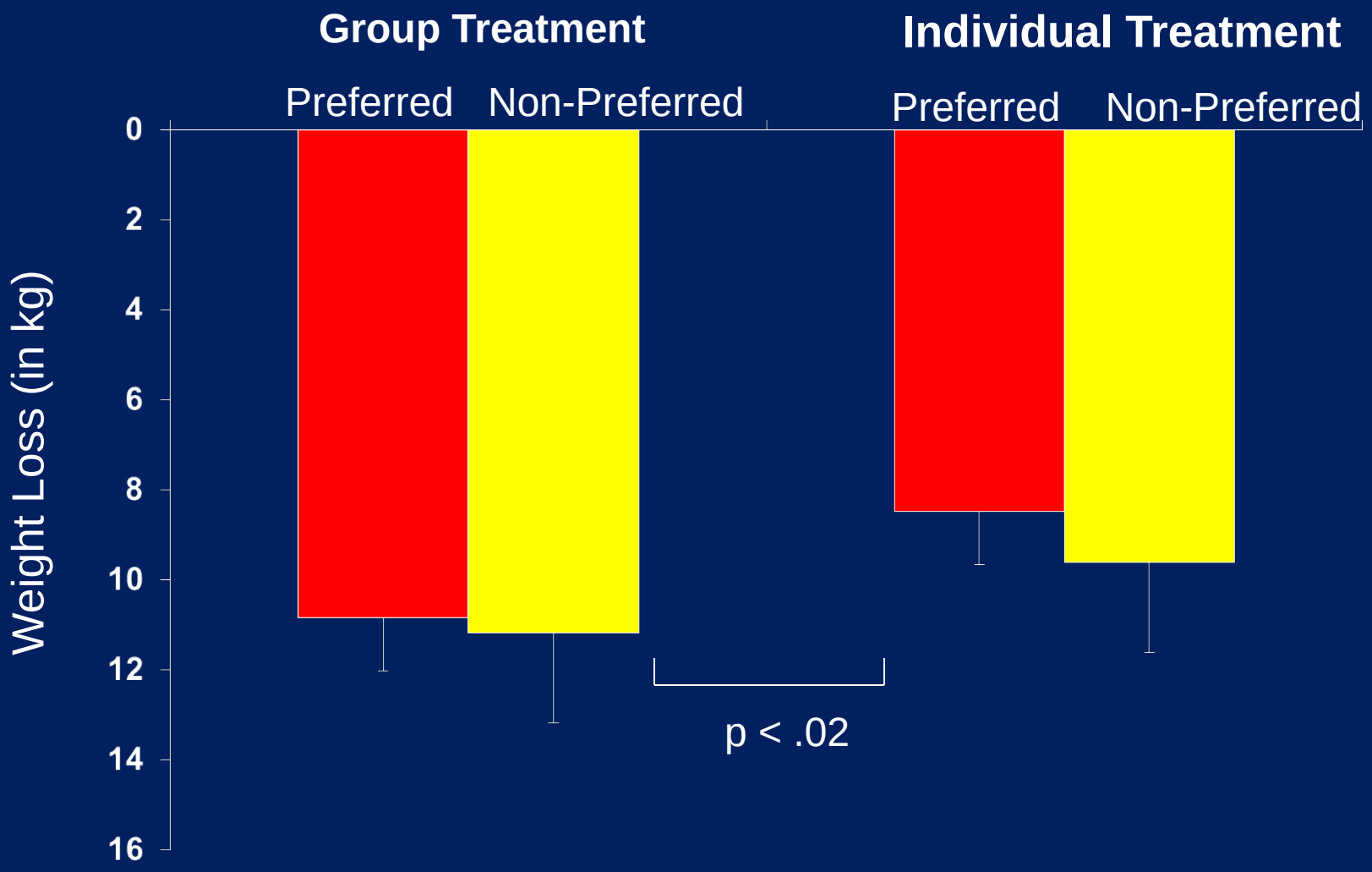
- Greater treatment intensity and duration
- Group treatment
- Portion-controlled meals

Maintenance of Lost Weight

- Continued patient-interventionist contact
- High levels of physical activity

LeBlanc et al. Ann Intern Med 2011;155:434-47.Wadden et al. Circulation 2012;125:1157-70.

Comparison of Group vs. Individual Treatment for Weight Loss: 6 months



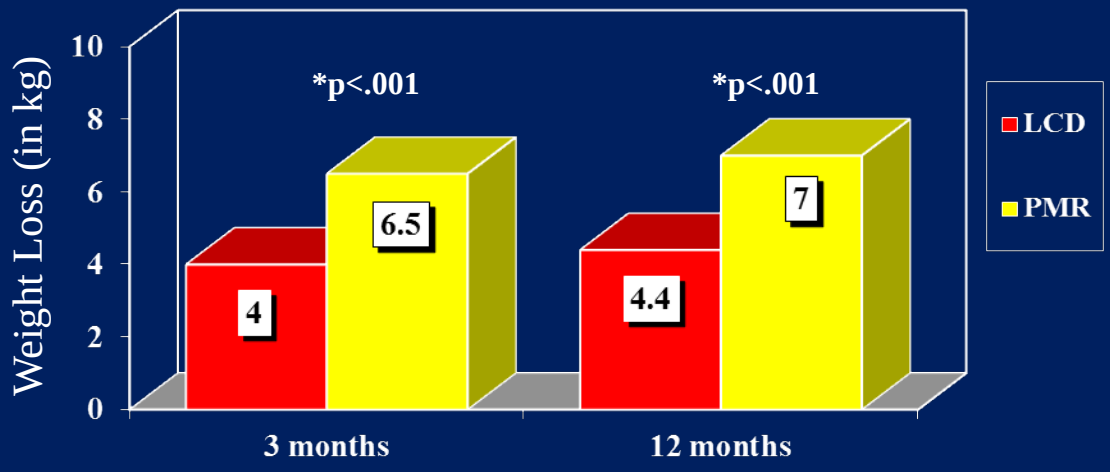
Renjilian et al. J Consult Clin Psychol 2001; 69:717-21.

Portion-Controlled Meals

- Provide fixed-portion and calorie amounts, either using detailed menu plans or meal replacements
- Facilitate patients' achieving calorie goals
- Are convenient to use

Meta-Analysis of Partial Meal Replacements (PMR) vs. Conventional Low-Calorie Diets (LCD)

Diets were matched on calorie prescription.



Wing RR et al. Int J Obes Relat Metab Disord 1996;20:56-62.

Heymsfeld et al. IJO 2003;27:537-49.

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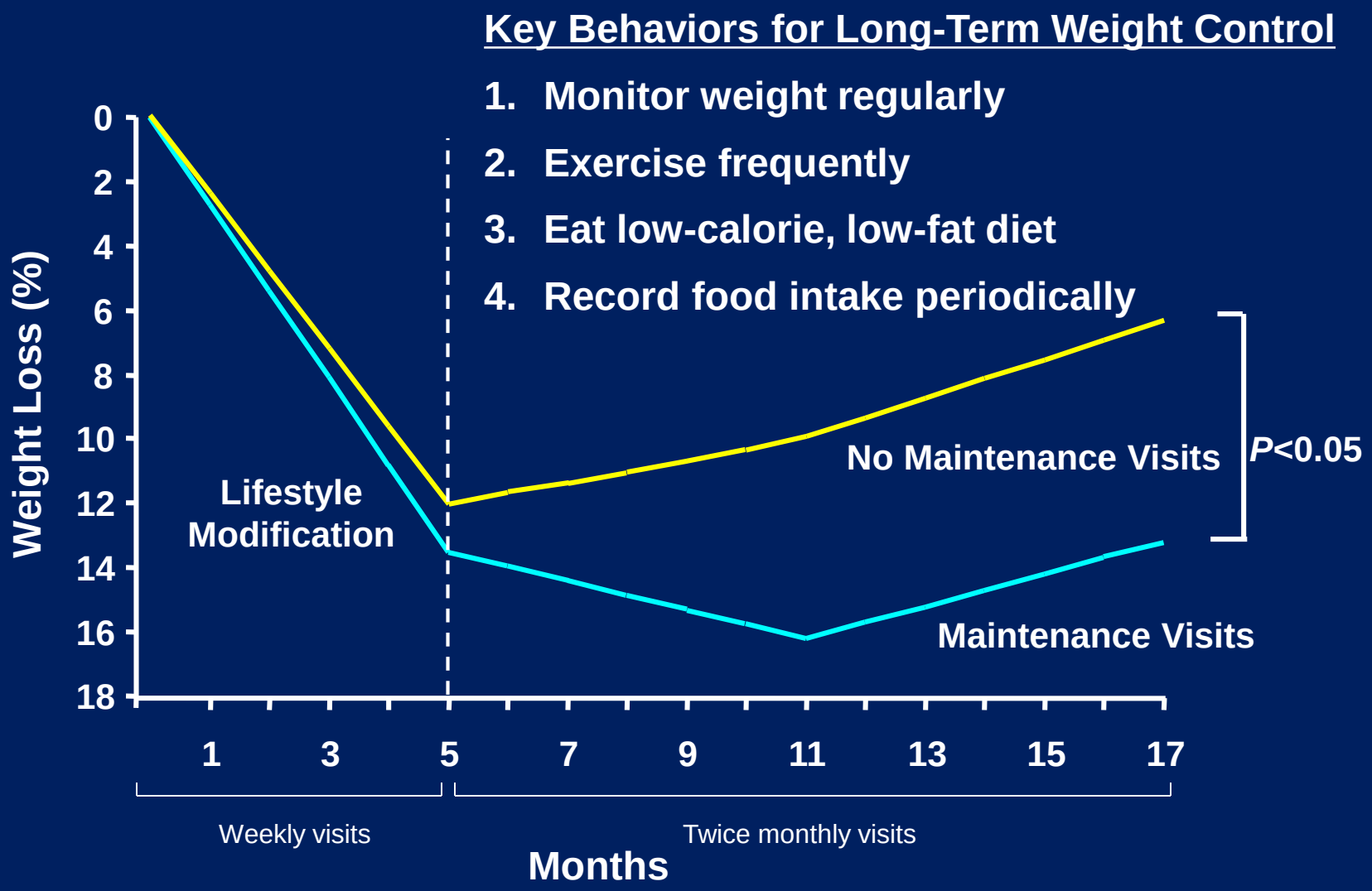
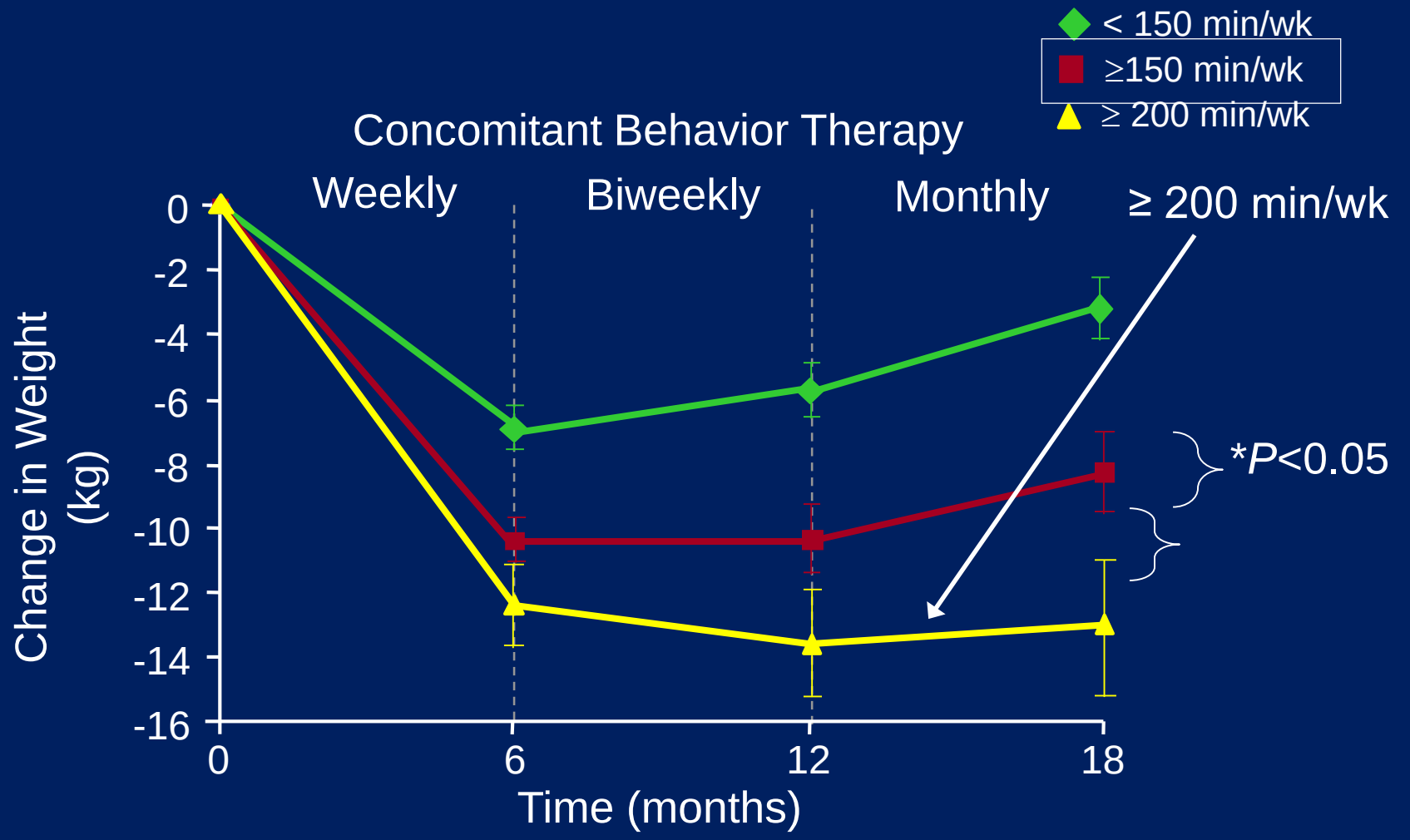
Wadden et al. Circulation 2012;125:1157-70.

Maintenance of Weight Loss Is Improved With Long-Term Behavioral Treatment



Wing et al. Annu Rev Nutr 2001;21:323-41; Perri et al. J Consult Clin Psychol 1988;56:529-34.

High Levels of Physical Activity are Needed for Weight Loss Maintenance



Jakicic et al. JAMA 1999;282:1554.
Donnelly et al. Med Sci Sports Exerc 2009;41:459-71.

Look AHEAD Study (Action for Health in Diabetes)

Diabetes Prevention Program:

7% weight loss, with increased activity, reduced risk of developing type 2 diabetes by 58%.

Look AHEAD Study:

Will a weight loss $\geq$ 7%, with increased activity, reduce risk of heart attack and stroke in obese persons with type 2 diabetes?

Look AHEAD Intensive Lifestyle Intervention (ILI): Years 1-4

- Year 1
  - 3 group visits/mo (mo 1-6); 2/mo (mo 7-12)
  - 1 individual session/month
  - Personal weight loss goal = 10%
- Years 2-4
  - Monthly on-site individual session
  - Monthly phone call or e-mail contact
  - Periodic refresher groups or campaigns offered 2-3 times per year for 6-8 weeks

Look AHEAD Research Group. Diabetes Care 2007;30:1374-83.

Intervention Recommendations

- Dietary Intake
  - 1200-1500 kcal/day < 250 lb
  - 1500-1800 kcal/day ≥ 250 lb
  - ≤ 30% calories from fat
  - Meal replacements (2 meals and 1 snack/d in Months 1-4; reduced use thereafter)
  - Menu plans provided
- Physical Activity
  - ≥ 175 min/wk (brisk walking)
  - 10,000 steps

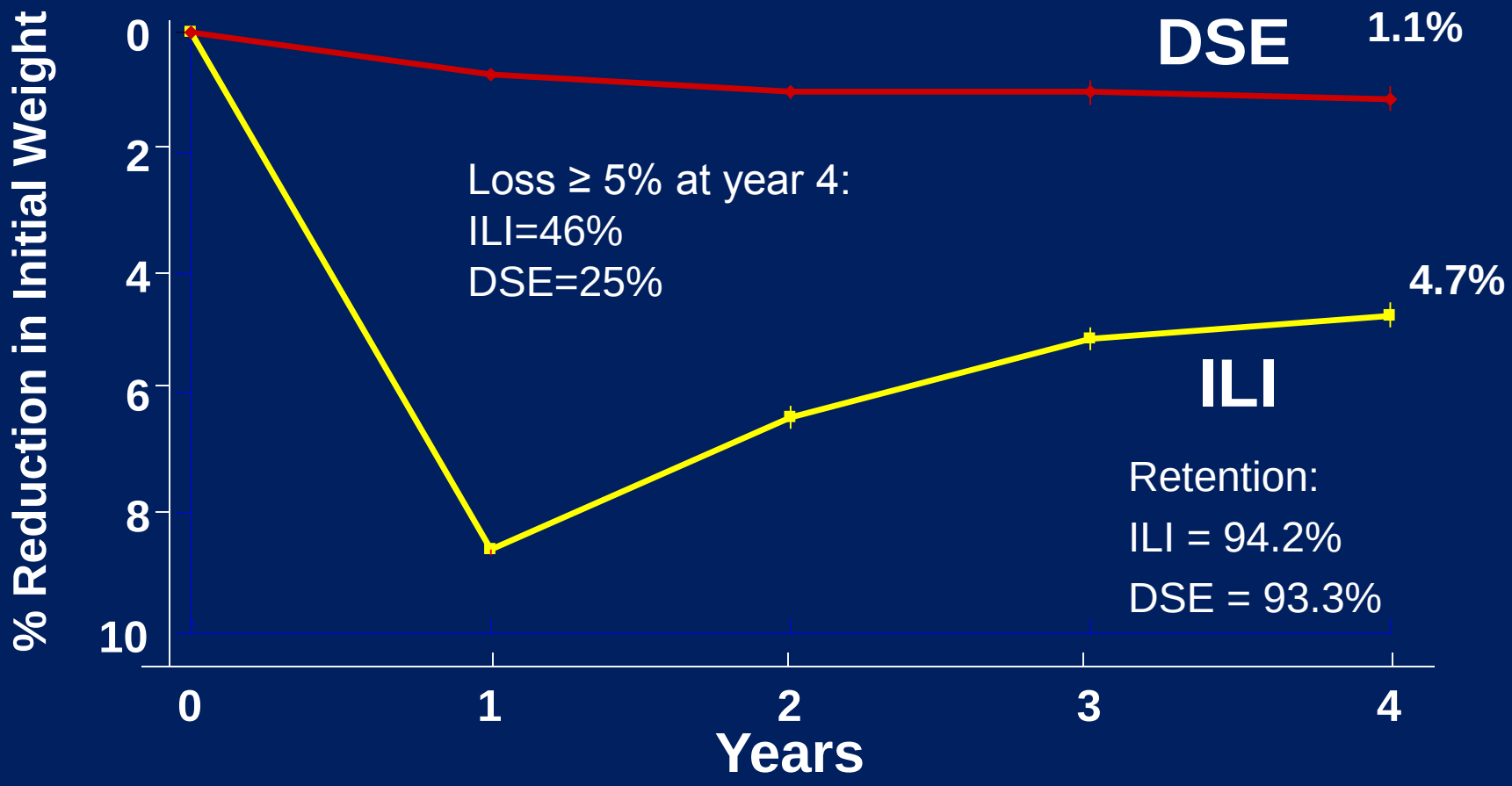
Look AHEAD Research Group. Diabetes Care 2007;30:1374-83.

Diabetes Support & Education (DSE)

- 3 meetings/year
- To promote retention
- Health education topics
  - Diet
  - Exercise
  - Social Support

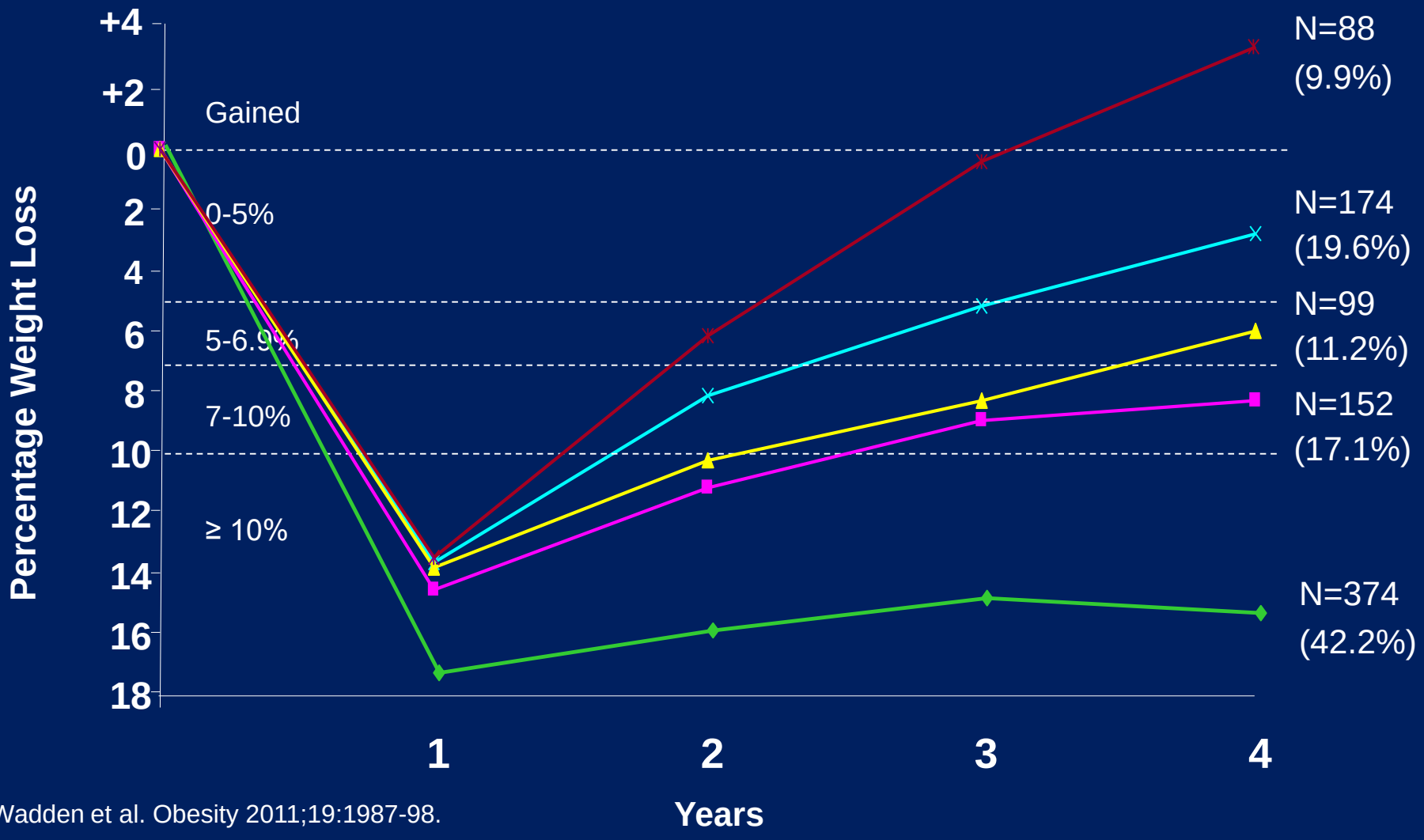
Look AHEAD Research Group. Diabetes Care 2007;30:1374-83.

Percentage Reduction in Initial Weight Over 4 Years in ILI and DSE Groups



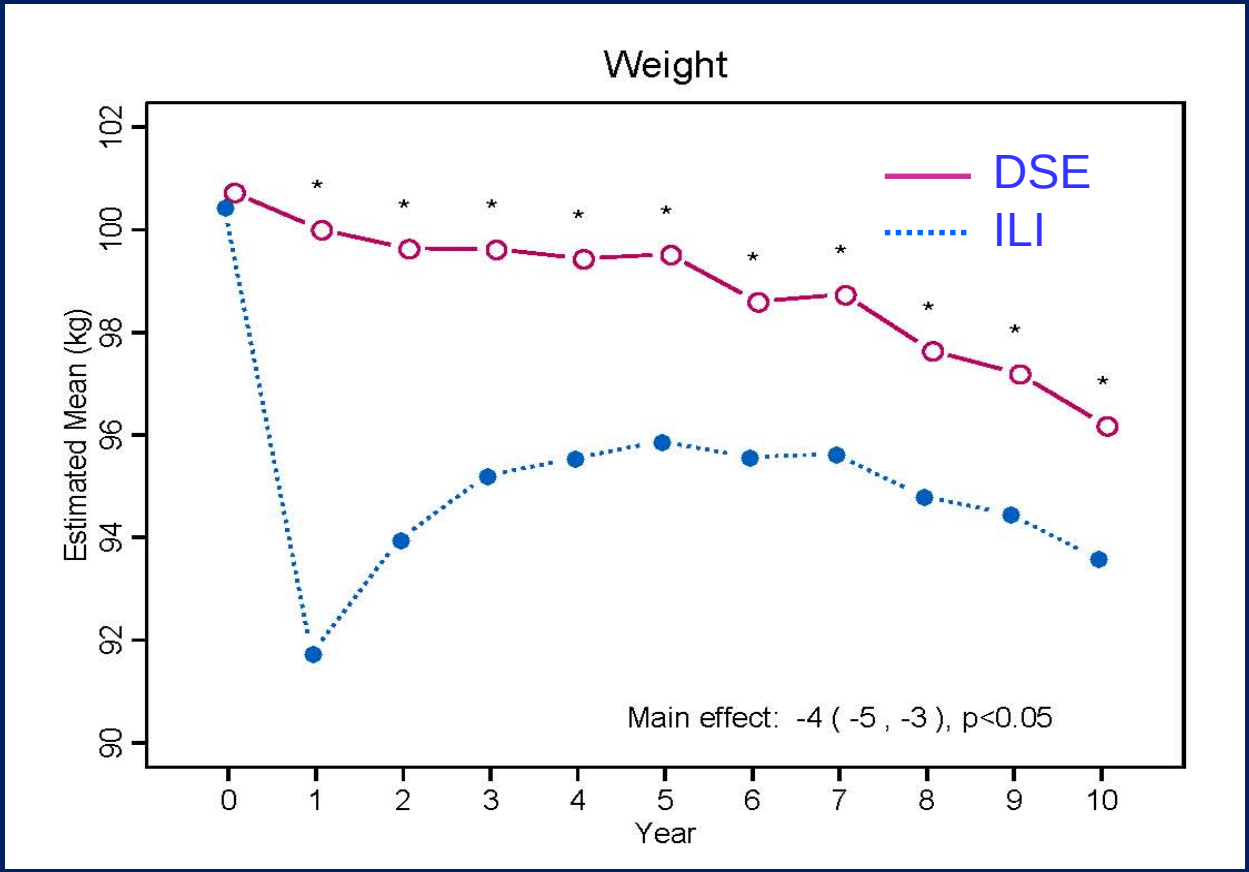
Look AHEAD Research Group. Arch Intern Med 2010;170:1566-75.

Four-Year Weight Loss Trajectories of 887 ILI Participants Who Had Lost ≥ 10% Initial Weight at Year 1



Wadden et al. Obesity 2011;19:1987-98.

Look AHEAD Cardiovascular Outcomes Study: Intensive Lifestyle Intervention in Overweight/Obese Type 2 Diabetics



5145 patients:
BMI=36.0 kg/m^2
Type 2 diabetes

DSE = Diabetes Support and Education (Usual Care)

ILI = Intensive Lifestyle Intervention

The Look AHEAD Research Group. N Engl J Med. 2013;369:145-54.

Look AHEAD: ILI, Compared with DSE, Improved:

- HbA_{1c} and need for insulin
- Systolic blood pressure and HDL cholesterol
- Sleep apnea
- Physical function, quality of life, and the risk of depression
- **But did not reduce the risk of cardiovascular morbidity and mortality, composite of fatal and non-fatal MI and stroke, and hospitalized angina**

Increasing the Availability of High-Intensity Interventions

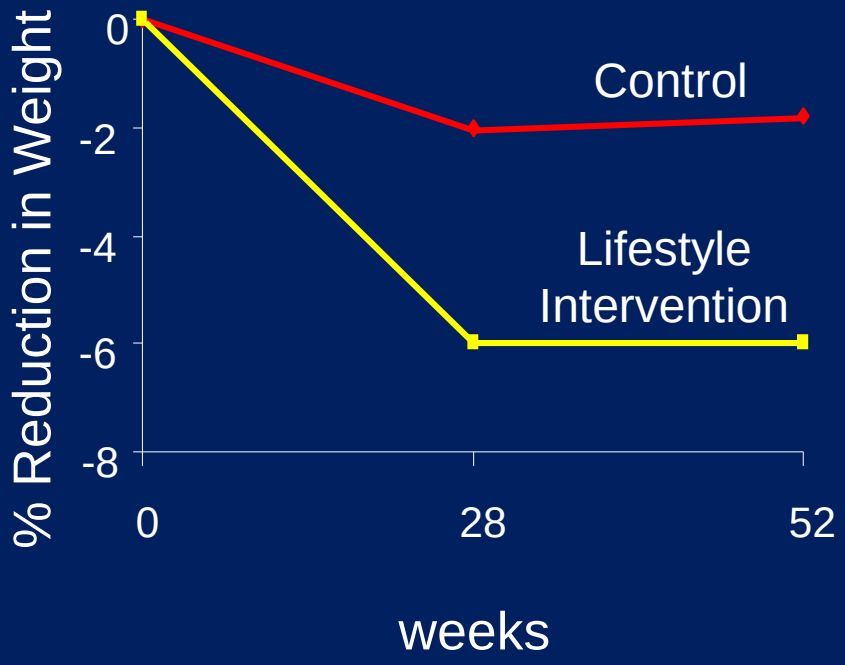
- DPP and Look AHEAD are high intensity, on-site intervention, with high costs, conducted in academic medical centers.
- Methods needed to extend lifestyle intervention to the community:
  - YMCA
  - Commercial programs
  - Electronic interventions
  - Internet and phone interventions

Translating the DPP into the Community with the YMCA

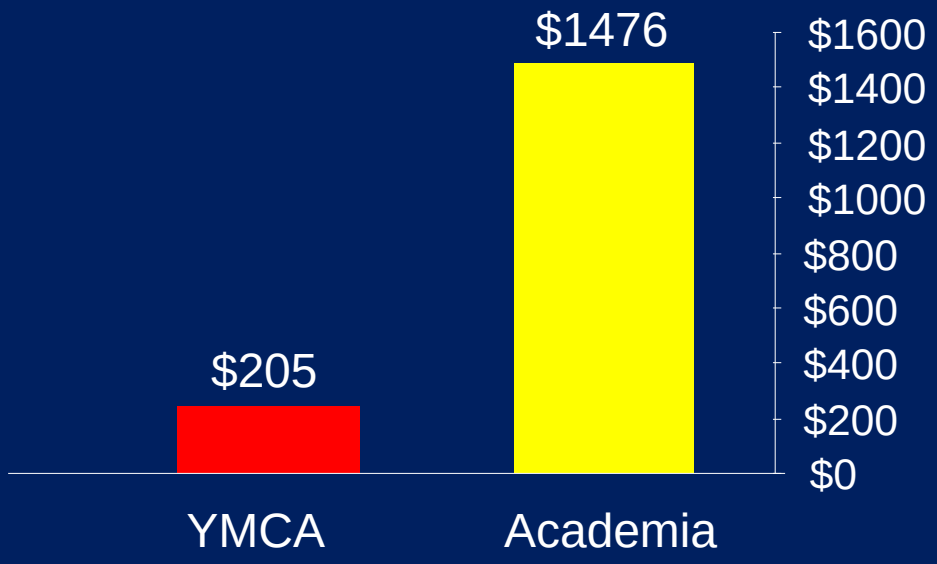
- YMCA wellness instructors trained to deliver DPP
- 16 weekly classroom-style sessions
- Monthly meetings thereafter through 52 weeks
- 92 participants, mean BMI=31.6 kg/m^2, casual capillary blood glucose of 110-199 mg/dL

Ackermann et al. Am J Prev Med 2008;35:357.

Weight at 1 Year



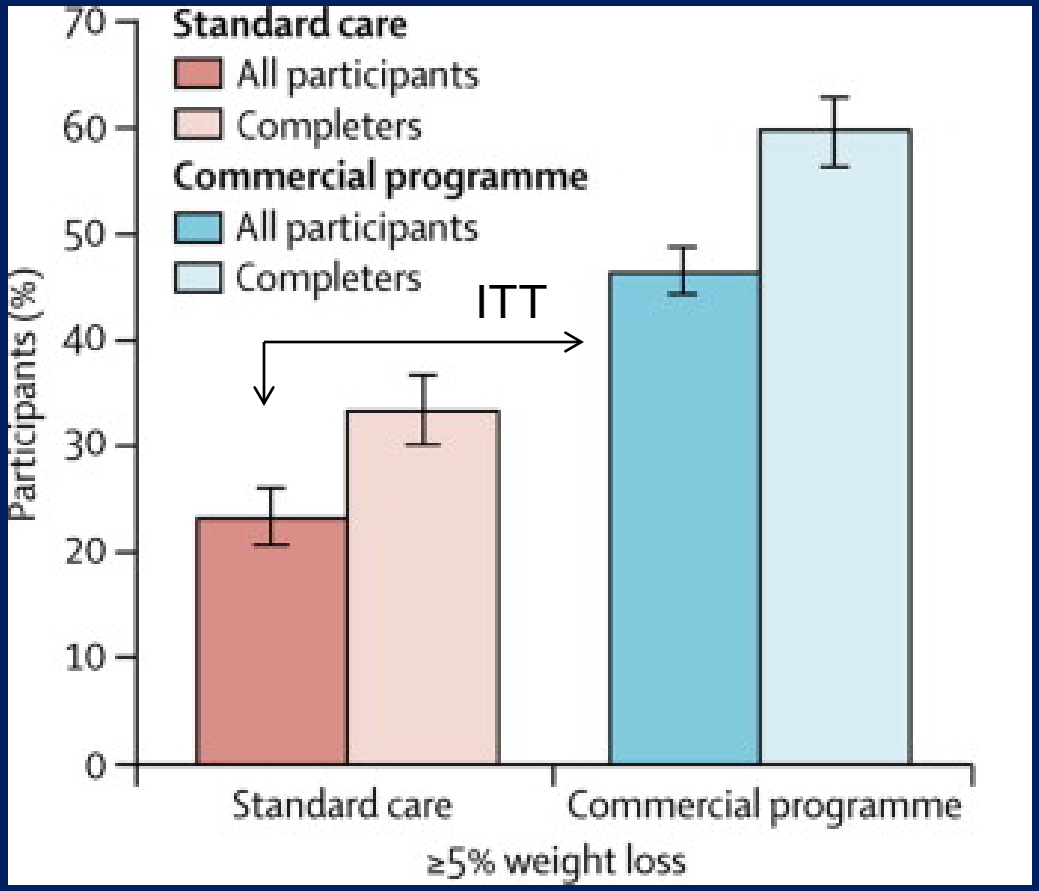
Cost of 1 Year of Treatment



Marrero DG. J Diabetes Sci Technol 2009;3:756-60. Ackermann et al. Am J Prev Med 2008;35:357.

Commercial Weight Loss Programs in Primary Care

- 772 patients recruited from primary care practices in 3 countries
- Randomly assigned to local Weight Watchers program or Usual Care
- Weekly meetings provided at no charge for 1 year
- Mean losses of 4.1 vs. 1.8 kg, respectively



Jebb et al. Lancet 2011;378:1485-92.

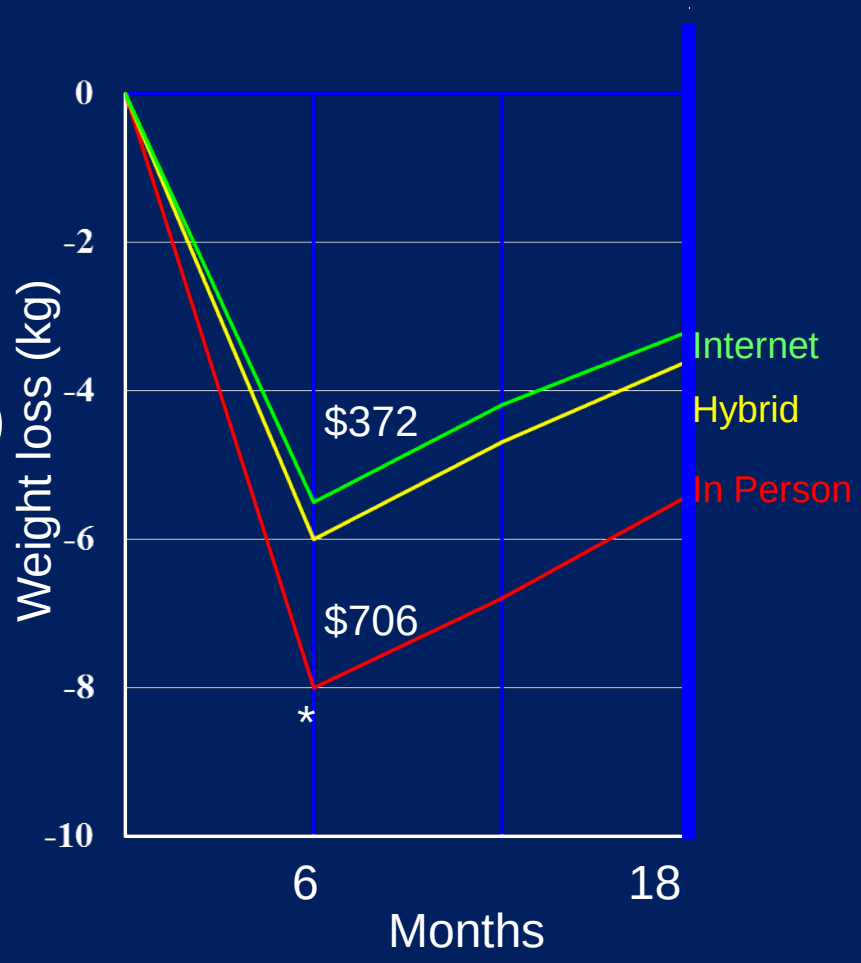
Electronically Delivered Weight Loss Interventions

- Email/text messaging
- Internet via computer, tablet, and Smartphone (hundreds of apps)
- Social networking sites (e.g., Facebook)
- Webcam/Podcast
  - "Tweets, Apps, and Pods: Mobile Pod"
- Reach large numbers of people, potentially at lower costs
- Reduced efficacy compared with in-person

Turner-McGrievy et al. Med Internet Res 2011;13:e120; Tate et al. JAMA 2003;289:1833-6; Tate et al. Arch Intern Med 2006;166:1620-5; Strecher V. Annu Rev Clin Psychol 2007; 353-76.
Haapala et al. Pub Health Nut 2009;12:2382-91; Napolitano MA et al. Obesity 2012; epub ahead of print.

Comparison of In-Person and Internet-Delivered Programs

- Treatment Conditions
  - In-person
  - Internet (synchronous chats)
  - Hybrid (1 in-person, 3 Internet/mo)
- Weight Loss: months 1-6
  - Weekly group sessions
- Weight Maintenance: months 7-18
  - 1 session/mo



* p ≤ 0.05 for In-person vs. Internet at month 6.

Harvey-Berino et al. Prev Med 2010;51:123-28.
Krukowski et al. Obesity 2011;19:1629-35.

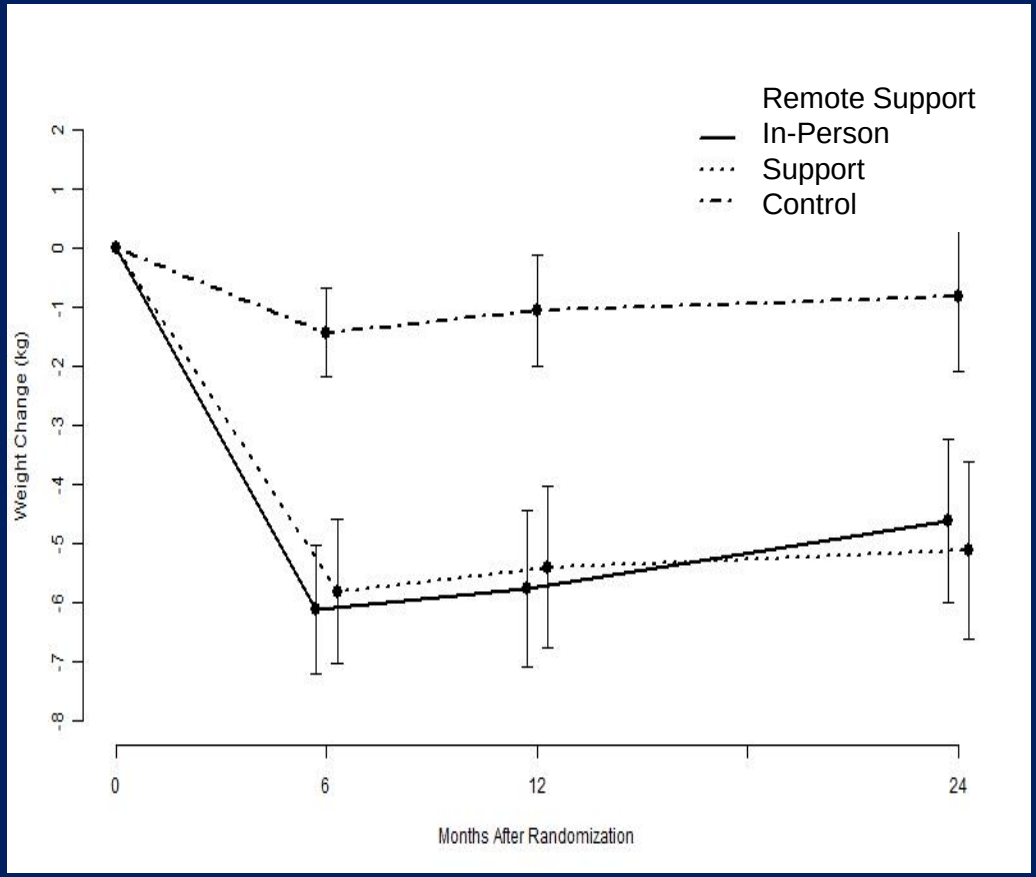
Challenges of Electronic Interventions

- Maintain participants' engagement and accountability, in face of information overload and easy treatment withdrawal.
- Support electronic interventions with personalized feedback from a trained interventionist who reinforces continued participation.
- Use telephone counseling (e.g., call center) for individual or group counseling; approaches efficacy of face-to-face visits.

Perri et al. Arch Intern Med 2008;168:2347-54.
Rock et al. JAMA 2010;304:1803-10.
DiGenio et al. Ann Intern Med 2009;150:255-62.
Donnelly et al. Int J Obes 2007;31:1270-76.
Appel et al. N Engl J Med 2011;365:1959-68.

Two-year Weight Loss (kg) for Remote (Telephone) vs. In-Person Support

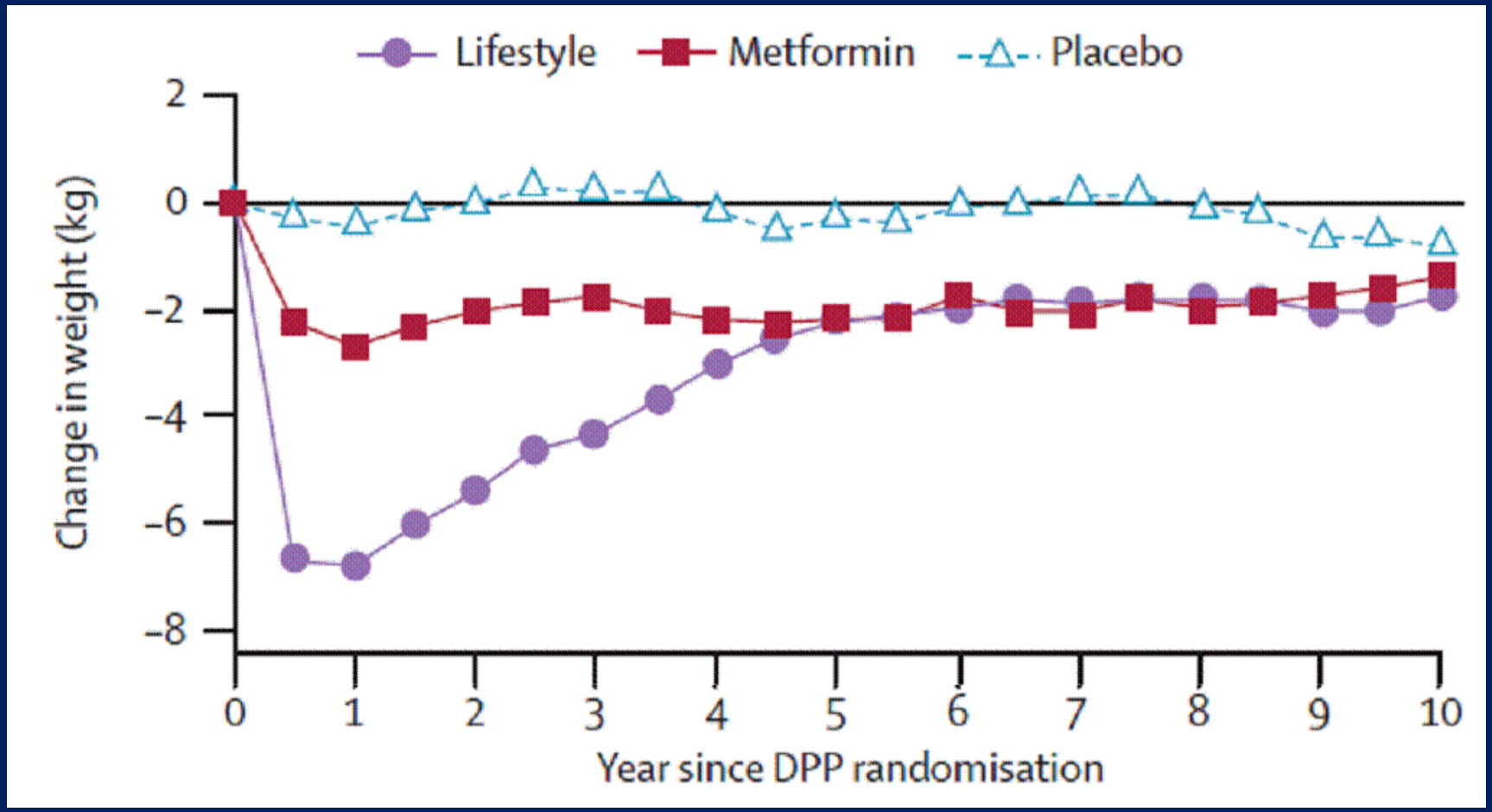
- Control (Usual Care – 1 visit)
- Remote Support – Telephone
  - Mo 1-3: weekly 20 min calls
  - Mo 4-24: monthly 20 min calls
  - **Total = 33 individual sessions**
  - Access to interactive Internet program
- In-Person Support (on-site visits)
  - Mo 1-3: weekly group (G) or individual (I) visits
  - Mo 4-6: 3 monthly contacts (G,I)
  - Mo 7-24: 2 monthly contacts (G,I)
  - **Total = 57 contacts**
  - Access to interactive Internet program



Appel et al. N Engl J Med 2011;365:1959-68.

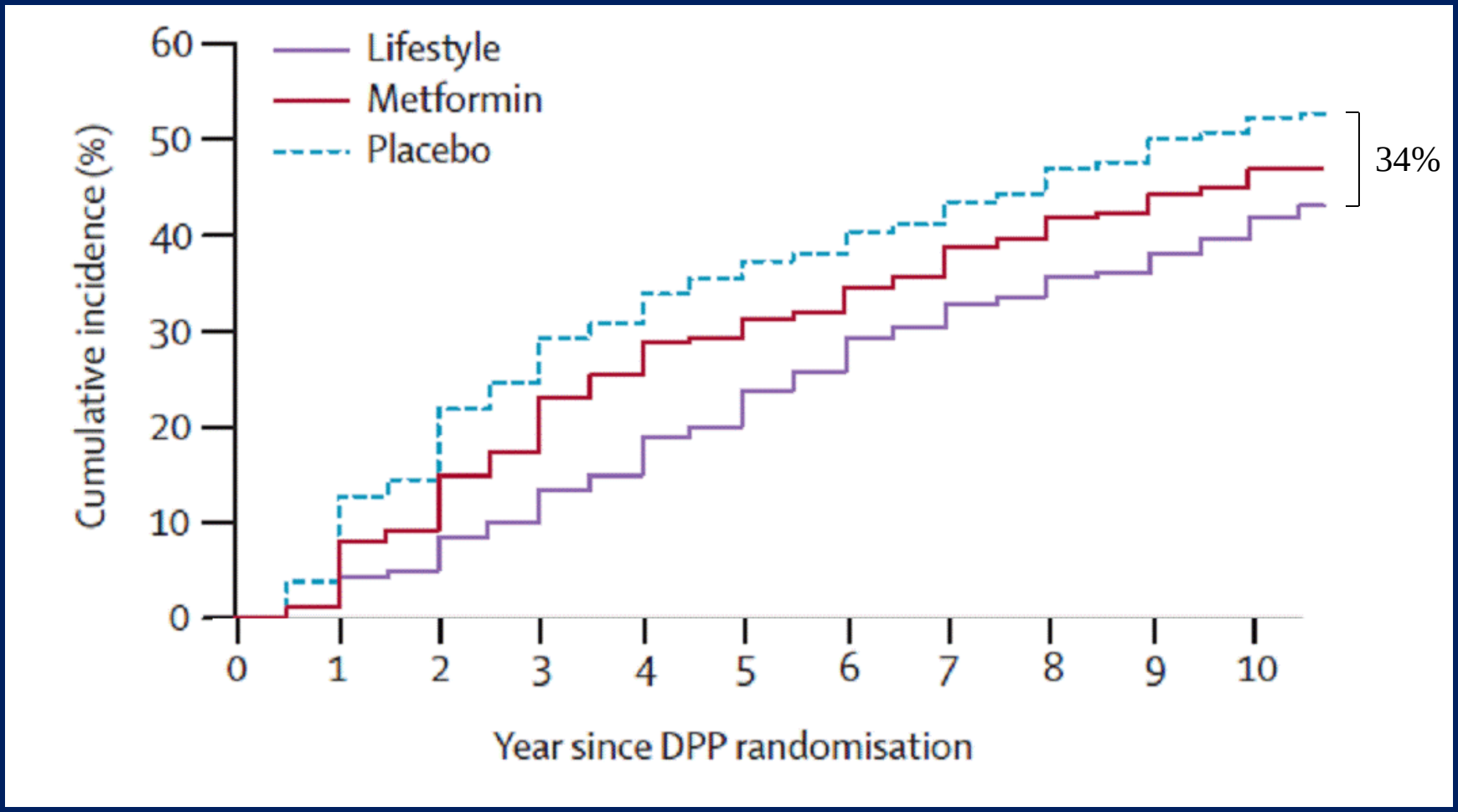
*P <0.001 (vs control)

Weight Change in DPP Outcomes Study



Diabetes Prevention Program Research Group. Lancet. 2009;374:1677-86.

This is Success!



Diabetes Prevention Program Research Group. Lancet. 2009;374:1677-86.

Look AHEAD Steering Committee

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