Improving the Health of Your Patients with Obesity

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ACP New Mexico Chapter Scientific Meeting
November 4, 2017
Epidemiology

https://stateofobesity.org/obesity-rates-trends-overview/
Health Risks of Obesity
13 cancers are associated with overweight and obesity

- Meningioma (cancer in the tissue covering brain and spinal cord)
- Adenocarcinoma of the esophagus
- Multiple myeloma (cancer of blood cells)
- Thyroid
- Breast (post-menopausal women)
- Liver
- Gallbladder
- Upper stomach
- Pancreas
- Colon and rectum
- Kidneys
- Uterus
- Ovaries

Cancers:
- Breast
- Uterus
- Colon
- Esophagus
- Pancreas
- Kidney
- Prostate

Heart disease:
- Diabetes
- Abnormal lipid profile
- High blood pressure

Liver disease:
- Fatty liver
- Cirrhosis

Other:
- Sleep apnea and snoring
- Lung disease
- Asthma
- Pulmonary blood clots
- Pancreatitis
- Female disorders
- Abnormal periods
- Infertility

Arthritis
Inflamed veins, often with blood clots
Gout
A 28 year old woman is seen in your clinic for a routine physical exam. Her vital signs are:

- Heart Rate: 78 bpm
- Blood Pressure: 138/86 mmHg
- Height: 5’3”
- Weight: 178 lbs
- BMI: 31.5
- Waist circumference: 37” (94cm)

She is concerned about the impact of her weight on her health and asks for treatment recommendations. She has “dieted” off and on for many years, but has never been successful with sustained weight loss. What is the most appropriate treatment recommendation at this time?

A. Prescribe phentermine
B. Prescribe phentermine/topiramate (Qsymia)
C. Advise her to follow a low calorie diet and to exercise for 150 minutes/week
D. Refer her to a 6-month intensive weight loss program
E. Refer her to a bariatric surgery center
Treatment of Obesity
# Treatment Recommendations

<table>
<thead>
<tr>
<th>Treatment</th>
<th>25 – 26.9</th>
<th>27 – 29.9</th>
<th>30 – 34.9</th>
<th>35 – 39.9</th>
<th>≥ 40</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diet, physical activity, behavior modification</td>
<td>Appropriate</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Pharmacotherapy</td>
<td>Not appropriate</td>
<td>With co-morbidities</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Surgery</td>
<td>Not appropriate</td>
<td>Not appropriate</td>
<td>With co-morbidities</td>
<td>+</td>
<td></td>
</tr>
</tbody>
</table>

NHLBI, 2000
Most Effective Program for Weight Loss

In-person, high-intensity (≥14 sessions in 6 months) program including:

• Prescription of a moderately-reduced calorie diet
• Increased physical activity
• Behavioral strategies to facilitate adherence to diet and activity

Jensen MD et al. Journal of the American College of Cardiology, 2013
Diet
Weight Loss Diets

Enjoy our new video series on Weight Loss Diets.

12 Day Grapefruit Diet

7-Day No Diet

Weight Loss Plan

DR. ATKINSON'S NEW DIET REVOLUTION

The Fat Flush Plan

The South Beach Diet

Protein Power

Enter the Zone

Weight Loss: The 5:2 Fasting Diet

Weight Loss Plan

Top 10 Superfoods for Weight Loss

Green Tea

Oatmeal

Dark Chocolate

Blueberries

Oranges

Salmon

Grapefruit

Avocados

PALEO

Eat Junk Food and Still Lose Weight

Jillian Michaels

Weight Watchers

Jenny Craig

 Atkins

nutrisystem

Enjoy Curves

GLUTEN FREE

Choose MyPlate.gov

Rachael Ray

50 Million Pound Loser

momentum

NutritionFacts.org

NutritionFacts.org

NutritionFacts.org
Commercial Weight Loss Programs

- Greater weight loss than control/education participants
- Weight loss maintained beyond 12 months
- Unclear if it is superior to behavioral counseling

- Greater sustained weight loss than control/education participants
- Greater sustained weight loss than counseling participants

- Greater short-term weight loss than control/education and behavioral counseling
- No long-term trial results found

Gudzune et al. Annals of Internal Medicine, 2015
Comparison of Four Weight Loss Diets

- 160 participants were randomly assigned to one of four weight loss diets

- All 4 diets resulted in statistically significant weight loss at 1 year; the difference between diets was not statistically significant (p=0.4)

Dansinger ML et al. JAMA, 2005
### Pounds Lost Trial

- 811 participants
- Calorie target for each participant represented a 750 kcal/d deficit
- All diets contained 8% of calories from saturated fat and had 20g/d of dietary fiber and 150 mg cholesterol per 1000 kcals
- Low–glycemic index foods were used in all diets

<table>
<thead>
<tr>
<th></th>
<th>Weight Loss Diets</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low Fat/ Average protein</td>
</tr>
<tr>
<td>Fat (%)</td>
<td>20</td>
</tr>
<tr>
<td>Protein (%)</td>
<td>15</td>
</tr>
<tr>
<td>Carbohydrate (%)</td>
<td>65</td>
</tr>
</tbody>
</table>

Sacks et al. NEJM, 2009
Mean Change in Body Weight from Baseline to 2 Years

- Satiety, hunger, satisfaction with the diet, and attendance at group sessions were similar for all groups

Sacks et al. NEJM, 2009
Best Diet for Weight Loss

“A variety of dietary approaches can produce weight loss in overweight and obese adults”

“To achieve weight loss, an energy deficit is required”

Effective strategies for reducing caloric intake include:

• Use of a specified energy intake target that is less than that required for energy balance (usually 1200-1500 kcal/day for women and 1500-1800 kcal/day for men)

• A prescribed energy intake deficit of 500 kcal/day or 750 kcal/day

• Restriction or elimination of specified food groups or provision of prescribed foods that result in lower calorie intake without a prescribed deficit

Jensen MD et al. Journal of the American College of Cardiology, 2013
Best Diet for Weight Loss

Are there other reasons to prescribe a specific diet?

• A healthy diet includes fats and carbohydrates
• Focus on diet quality
  • Unsaturated fats instead of saturated and trans fats
  • High fiber, low glycemic index carbohydrates instead of processed carbohydrates and added sugars
Best Diet for Overall Health

• Because foods are typically consumed in combination rather than individually, the ACC/AHA Guideline recommends a focus on dietary patterns rather than individual dietary components
  • Aim for a dietary pattern that achieves 5–6% of calories from saturated fat
  • Reduce percentage of calories from trans fat

Mediterranean Dietary Pattern

DASH Dietary Pattern

Eckel RH et al. Journal of the American College of Cardiology, 2014
# Best Diet for Overall Health

<table>
<thead>
<tr>
<th></th>
<th>Low-carbohydrate</th>
<th>Low-fat/vegetarian/vegan</th>
<th>Low-glycemic</th>
<th>Mediterranean</th>
<th>Mixed/balanced</th>
<th>Paleolithic</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Health benefits relate to:</strong></td>
<td>Emphasis on restriction of refined starches and added sugars in particular.</td>
<td>Emphasis on plant foods direct from nature; avoidance of harmful fats.</td>
<td>Restriction of starches, added sugars; high fiber intake.</td>
<td>Foods direct from nature; mostly plants; emphasis on healthful oils, notably monounsaturates.</td>
<td>Minimization of highly processed, energy-dense foods; emphasis on wholesome foods in moderate quantities.</td>
<td>Minimization of processed foods. Emphasis on natural plant foods and lean meats.</td>
</tr>
<tr>
<td><strong>Compatible elements:</strong></td>
<td>Limited refined starches, added sugars, processed foods; limited intake of certain fats; emphasis on whole plant foods, with or without lean meats, fish, poultry, seafood.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>And all potentially consistent with:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Food, not too much, mostly plants(^a, b, c).</td>
<td></td>
</tr>
</tbody>
</table>

\(^a\)From Reference 135.  
\(^b\)Portion control may be facilitated by choosing better-quality foods which have the tendency to promote satiety with fewer calories.  
\(^c\)While neither the low-carbohydrate nor Paleolithic diet need be “mostly plants,” both can be.
Organic Foods

You can take organics over the top.... Here are organic sprinkles, $1.99, to go over the top of your organic ice cream, organic whipped cream, and organic hot fudge, which probably leads to organic obesity and all natural diabetes.
Question #2

• Which of the following is associated with better maintenance of weight loss over time?
  A. Frequent self-weighing
  B. Following a low carbohydrate diet
  C. Following a low fat diet
  D. Exercise for 150 minutes per week
Best Diet for Weight Loss

• If the composition of the diet doesn’t matter, what does matter? Adherence to the prescribed weight loss diet

• The best diet for weight loss is the one that the individual will stick with over the long-term

• Studies consistently find that adherence to the prescribed diet is a strong predictor of weight loss

How can diet adherence be enhanced?
Improving Diet Adherence

• Use a variety of diet options, with the aim of matching individual patient food preferences, lifestyles, and cardiovascular risk profiles
• Allow individuals to choose from a variety of weight loss diets
• Create culturally appropriate interventions
• Create a comfortable and supportive environment

Dansinger ML et al. JAMA, 2005

Hollis JF et al. American Journal of Preventive Medicine, 2008
Improving Diet Adherence

• Other predictors of weight loss success can enhance diet adherence
  • Attendance at group sessions
  • Food logging
  • Daily weighing
Attendance at Group Sessions

• Pounds Lost Trial
  • Attendance was strongly associated with weight loss (0.2 kg per session attended)

  Sacks et al. NEJM, 2009

• Weight Loss Maintenance Trial – Initial Phase
  • After adjusting for race, gender, and initial weight, greater weight loss was associated with more frequent attendance at the group sessions

  Hollis JF et al. American Journal of Preventive Medicine, 2008
Food Logs

Figure 5. Weekly mean food log days of participants between 0 and 6 months. Error bars indicate the standard error of the mean.

Painter SL et al. Journal of Medical Internet Research, 2017
Food Records & Weight Loss

- 6 months weight loss program prior to onset of the Weight Loss Maintenance Trial
- Change in weight over 6 months
- Controlled for mean exercise of 117 minutes/week

Hollis JF et al. American Journal of Preventive Medicine, 2008
Weigh-In Frequency

Figure 2. Weekly mean weigh-in frequency of participants between 0 and 6 months. Error bars indicate the standard error of the mean.
Maintenance of Weight Loss

Studies consistently show weight regain after initial weight loss

- Pounds Lost Trial
  - Weight regain began after 12 months in all groups

- Look AHEAD Study
  - Weight regain began after 1 year

Sacks et al. NEJM, 2009

Look AHEAD Research Group. Obesity, 2014
## Look AHEAD

Weight control behaviors at Year 8 for participants who maintained (N=324) vs. regained (N=117) their >10% weight loss achieved at Year 1

<table>
<thead>
<tr>
<th>Year 8 Behaviors</th>
<th>Maintained ≥10% Loss</th>
<th>Gained Above Baseline Weight</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical activity (kcal/wk)</td>
<td>1471.9 ± 121.2</td>
<td>799.9 ± 100.9</td>
<td>0.001</td>
</tr>
<tr>
<td>Reduced Kcal (no. wk/yr)</td>
<td>20.4 ± 1.4</td>
<td>11.9 ± 2.1</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Reduced fat (no. wk/yr)</td>
<td>24.2 ± 1.5</td>
<td>15.6 ± 2.2</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Increased exercise (no. wk/yr)</td>
<td>12.9 ± 1.3</td>
<td>8.2 ± 1.8</td>
<td>0.013</td>
</tr>
<tr>
<td>Meal replacements (no. wk/yr)</td>
<td>22.8 ± 2.0</td>
<td>17.3 ± 2.9</td>
<td>0.072</td>
</tr>
</tbody>
</table>

- **Monitored weight**
  - ≥Weekly, N (%): 262 (82.4) vs. 81 (69.8) | **0.001**
  - ≥Daily, N (%): 152 (47.8) vs. 33 (28.4) | **<.001**

Look AHEAD Research Group. Obesity, 2014
Behaviors:
• Leisure-time caloric expenditure
• Dietary restraint (conscious efforts to restrict food intake)
• Self-weighing frequency
• Percent of intake from fat
• Disinhibition (tendency toward over-eating and loss of control)

Proportion of participants with each value:
0: 55.9%, 1: 33.0%, 2: 8.5%, 3: 1.8%, 4: 0.7%, 5: 0.0%
Exercise
Physical Activity & Weight Loss

- 6 months weight loss program prior to onset of the Weight Loss Maintenance Trial
- Change in weight over 6 months
- Controlled for mean days of food records of 3.7/week

Hollis JF et al. American Journal of Preventive Medicine, 2008
Activity Calories & Weight Change

Wadden et al. Obesity, 2011

Kcals/Week of Activity at Year 4

- >10%: 1997.9
- 5-9.9%: 1406.2
- 0-4.9%: 1127.3
- Gained: 939.3

Weight Change Category at Year 4

p < 0.005 for all comparisons with > 10% group
Exercise vs. Diet for Weight Loss

• Control
  • No change in usual diet or exercise

• Exercise-induced weight loss group:
  • Performed exercise sufficient to expend 700 calories/day
  • No change in usual diet (weight maintenance)

• Diet-induced weight loss group:
  • No change in usual exercise (weight maintenance)
  • Ate 700 calories/day less than needed to maintain weight

• Exercise without weight loss group:
  • Performed exercise sufficient to expend 700 calories/day
  • Ate 700 calories/day more than needed to maintain weight to balance calories expended with exercise

Ross R et al. Annals of Internal Medicine, 2000
Exercise vs. Diet for Weight Loss

- 52 obese men participated in the 12-week intervention phase
- All participants were advised to eat a diet comprised of 55% to 60% carbohydrate, 15% to 20% protein, and 20% to 25% fat
- Exercise sessions were supervised

<table>
<thead>
<tr>
<th></th>
<th>Control</th>
<th>Exercise-induced weight loss</th>
<th>Diet-induced weight loss</th>
<th>Exercise without weight loss</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre</td>
<td>Post</td>
<td>Pre</td>
<td>Post</td>
</tr>
<tr>
<td>Weight (lbs)</td>
<td>212.7</td>
<td>212.9</td>
<td>223.3</td>
<td>206.8$^§$</td>
</tr>
<tr>
<td>Weight change (lbs)</td>
<td>+ 0.2</td>
<td>- 16.5</td>
<td>- 16.3</td>
<td>- 16.3</td>
</tr>
<tr>
<td>VO2 max (mL/kg/min)</td>
<td>38.3</td>
<td>38.2</td>
<td>37.4</td>
<td>45.7$^{†}$</td>
</tr>
</tbody>
</table>

* Change (pre-post) is significantly greater compared with change in control group
$§$ Change (pre-post) is significantly greater compared with change in exercise w/o weight loss group
$^{†}$ Change (pre-post) is significantly greater compared with change in diet-induced weight loss group

Ross R et al. Annals of Internal Medicine, 2000
Exercise for Weight Loss

• For weight loss, an energy deficit of 500 kcals per day will result in approximately one pound weight loss per week

• The energy deficit is the energy expended for exercise minus resting energy expenditure

• How much exercise does it take to create an energy deficit of 500 calories?
Energy Expenditure for a 220 lb Person

20 minute walk at 20min/mile pace:
   Rest 20 min = 100kg x 1MET x 0.33h = 33 kcals
   Walk 20 min = 100kg x 3.3MET x 0.33h = 109 kcals
   Energy deficit = 109 – 33 = 76 kcals

90 minute walk at 20min/mile pace:
   Rest 90 min = 100kg x 1MET x 1.5h = 150 kcals
   Walk 90 min = 100kg x 3.3MET/h x 1.5h = 495 kcals
   Energy deficit = 495 – 150 = 345 kcals

30 minute stationary bike ride:
   Rest 30 min = 100kg x 1MET x 0.5h = 50 kcals
   Bike 30 min = 100kg x 5MET x 0.5h = 250 kcals
   Energy deficit = 300 – 50= 200 kcals
Exercise for Weight Loss

• The problem is that many people who are obese can’t do enough exercise to create a significant energy deficit

• Are there other benefits from exercise?
Fitness and All-Cause Mortality

Meta-analysis of All-Cause Mortality Compared to Normal Weight Fit Individuals

* Statistically significant difference compared to normal weight/fit

Barry VW et al. Progress in Cardiovascular Diseases, 2014
Exercise Without Weight Loss

• Subjects:
  • 58 sedentary overweight/obese men

• Intervention:
  • Supervised aerobic exercise 5 times/week for 12 weeks
  • Each exercise session was designed to expend 500 calories

• Results:
  • 32 subjects lost the expected amount of weight based on energy expenditure (responders)
  • 26 subjects failed to lose the expected amount of weight based on energy expenditure (non-responders)

King NA et al. British Journal of Sports Medicine, 2009
Beneficial Effects of Exercise

- Changes in all variables were statistically significant in both groups
- The difference between the groups was not statistically significant for any variable

King NA et al. British Journal of Sports Medicine, 2009
Beneficial Effects of Exercise

Conclusion:

“These data demonstrate that significant and meaningful health benefits can be achieved even in the presence of lower-than-expected exercise-induced weight loss. A less successful reduction in body weight does not undermine the beneficial effects of aerobic exercise. From a public health perspective, exercise should be encouraged and the emphasis on weight loss reduced.”

King NA et al. British Journal of Sports Medicine, 2009
Energy Flux & Energy Balance

Theory:

• Human physiology is such that it is easier to achieve energy balance when there is a high energy flux (high energy flow in the body)

• For high energy flux to occur, there needs to be a high level of physical activity

• Energy balance is best regulated at high (but not excessive) levels of physical activity

Energy Flux & Energy Balance

• Matching of energy intake and energy expenditure is less accurate when people are very inactive
  • Food intake does not decline when energy demand declines

• Human physiology is adapted to regulate energy balance best under conditions in which physical activity (energy expenditure) “pulls” appetite

Energy Flux & Energy Balance

- In the regulated zone, energy intake is pulled along to meet high energy needs, and energy intake and expenditure are very sensitive to changes in each other.
- In the unregulated zone with low energy flux, energy intake and expenditure are only weakly sensitive to changes in each other, and maintaining a healthy body weight requires sustained food restriction.

Energy Flux & Energy Balance

To summarize:

• Decreasing food intake to match low levels of energy expenditure is more difficult than matching food intake to high levels of energy expenditure
Summary

Diet

• For health
  “Eat food. Not too much. Mostly plants.”
  Michael Pollan, In Defense of Food, 2008

• For weight loss
  • Focus on creating a calorie deficit
  • Focus on adherence
    • Enrollment in a comprehensive weight loss program with:
      • Frequent contact
      • Food logging
      • Frequent weighing
Summary

Exercise

• Encourage increased activity AND exercise
• For health
  • Advise 150 minutes/week of moderate intensity exercise

• For weight loss
  • Exercise alone may not be sufficient to result in weight loss because obese people may not be able to create a large enough calorie deficit
  • Exercise is essential for maintenance of weight loss
  • Advise 60-90 minutes most days of the week
Resources
Mediterranean Dietary Pattern

Mediterranean-style dietary patterns are higher in:
• Fruits (particularly fresh)
• Vegetables (emphasizing root and green varieties)
• Whole grains (cereals, breads, rice, or pasta)
• Fatty fish (rich in omega–3 fatty acids)

Lower in:
• Red meat (and emphasizing lean meats)
• Higher fat dairy food (substitute lower-fat or fat-free dairy products)

And use instead of butter and other fats:
• Oils (olive or canola)
• Nuts (walnuts, almonds, or hazelnuts)
• Or margarines blended with rapeseed or flaxseed oils
Mediterranean Dietary Pattern

• Moderate in total fat:
  • 32–35% of total calories

• Relatively low in saturated fat:
  • 9–10% of total calories

• High in fiber:
  • 27–37g/day

• High in polyunsaturated fats:
  • Particularly omega-3s
DASH Dietary Pattern

High in:
• Vegetables and fruits
• Low-fat dairy products
• Whole grains
• Poultry and fish
• Nuts

Low in:
• Sweets
• Sugar-sweetened beverages
• Red meats
DASH Dietary Pattern

• The DASH dietary pattern is low in saturated fat, total fat, and cholesterol
• It is rich in potassium, magnesium, and calcium, as well as protein and fiber
Healthy Eating

The Nutrition Source:
https://www.hsph.harvard.edu/nutritionsource/

Nutrition Action:
https://cspinet.org/nutrition-action-healthletter
Exercise Resources

• Multigenerational Centers
  • https://www.cabq.gov/seniors/senior-multigenerational-centers

• Bosque & Foothills trails
  • https://www.cabq.gov/parksandrecreation/open-space/facilities-map

• Malls for walking
  • http://local.aarp.org/albuquerque-nm/mall-walking/
Amerigroup Community Care of New Mexico
Amerivantage Classic + Rx (HMO)

BlueCross BlueShield of New Mexico
Blue Cross Medicare Advantage Basic (HMO)SM
Blue Cross Medicare Advantage Premier (HMO)SM
Blue Cross Medicare Advantage Premier Plus (HMO-POS)SM
Blue Cross Medicare Advantage Choice Plus (PPO)SM

BlueCross BlueShield of New Mexico
Blue Cross Medicare Advantage Choice Premier (PPO)SM

Humana
Medicare Advantage and Medicare Supplement

Presbyterian Health Plan of New Mexico
Presbyterian MediCare PPO Plan 1
Presbyterian MediCare PPO Plan 2 with Rx
Presbyterian MediCare PPO Plan 3 with Rx
Presbyterian Senior Care Plan 1 (HMO)
Presbyterian Senior Care Plan 2 with Rx (HMO)
Presbyterian Senior Care Plan 3 with Rx (HMO)
Presbyterian Dual Plus (HMO SNP)

UnitedHealthcare®
AARP MedicareComplete Choice
UnitedHealthcare Dual Complete
References


References


References


References

• Ross R, Dagnone D, Jones PJH, Smith H, Paddags A, Hudson R, Janssen I. Reduction in Obesity and Related Comorbid Conditions after Diet-Induced Weight Loss or Exercise-Induced Weight Loss in Men: A Randomized, Controlled Trial. *Annals of Internal Medicine*, 2000; 133:92-103.


References
