The Challenge of Obesity in America: Options for Medical Treatment

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Member, Board of Regents

Wisconsin Chapter meeting
September 9, 2012
The Challenge of Obesity in America: Options for Medical Treatment

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Member, Board of Regents

√ Consultant B-I Pharmaceuticals (2011)
√ I own Merck stock
√ I have no conflicts
Sources:

• MKSAP 14
• Uptodate.com
• P.I.E.R. (ACP decision support module at acponline.org)
• NEJM, *Annals of Internal Medicine*, JAMA, etc.
Sources:

Dr. Ronald M. Davis
AMA President (2007-08)

Director of Health Promotion
and Disease Prevention
Henry Ford Health System
Bibliography is available

• Posted on Google documents
  https://docs.google.com/document/d/10akkgBiedBNnmnx1_fGSJv47fGkp53HTYGBJz5UFwvY/edit?hl=en_US

• drcharlescutler@gmail.com
The Challenge of Obesity in America: Options for Medical Treatment

• Basic Science
• Extent of the problem
• Underlying causes
• Test your knowledge
The Challenge of Obesity in America: Options for Medical Treatment

• Basic Science
Definition of Obesity

• An adult who has a BMI between 25 and 29.9 is considered overweight.
• An adult who has a BMI of 30 or higher is considered obese.
• BMI ranges for children and teens are defined so that they take into account normal differences in body fat between boys and girls and differences in body fat at various ages.
## Body Mass Index Table 1

For BMI greater than 35, go to Table 2.

To use the table, find the appropriate height in the left-hand column labeled Height. Move across to a given weight (in pounds). The number at the top of the column is the BMI at that height and weight.

Pounds have been rounded off. Select the PDF version for better printing.

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Go to Table 2
## Body Mass Index Table 1

To use the table, find the appropriate height in the left-hand column labeled Height. Move across to a given weight (in pounds). The number at the top of the column is the BMI at that height and weight.

Pounds have been rounded off.

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[Go to Table 2](#)
**Body Mass Index Table 1**

For BMI greater than 35, go to Table 2

To use the table, find the appropriate height in the left-hand column labeled Height. Move across to a given weight (in pounds). The number at the top of the column is the BMI at that height and weight.

Pounds have been rounded off.

Select the PDF version for better printing.

| Height (inches) | 19  | 20  | 21  | 22  | 23  | 24  | 25  | 26  | 27  | 28  | 29  | 30  | 31  | 32  | 33  | 34  | 35  |
|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 58             | 91  | 96  | 100 | 105 | 110 | 115 | 119 | 124 | 129 | 134 | 138 | 143 | 148 | 153 | 158 | 162 | 167 |
| 60             | 97  | 102 | 107 | 112 | 117 | 122 | 127 | 132 | 137 | 143 | 148 | 153 | 158 | 163 | 168 | 174 | 179 |
| 61             | 100 | 106 | 111 | 116 | 122 | 127 | 132 | 137 | 143 | 148 | 153 | 158 | 164 | 169 | 174 | 180 | 185 |
| 62             | 104 | 109 | 115 | 120 | 125 | 131 | 136 | 142 | 147 | 153 | 158 | 164 | 169 | 175 | 180 | 186 | 191 |
| 63             | 107 | 113 | 118 | 124 | 130 | 135 | 141 | 146 | 152 | 158 | 163 | 169 | 175 | 180 | 186 | 191 | 197 |
| 64             | 110 | 116 | 122 | 128 | 134 | 140 | 145 | 151 | 157 | 163 | 169 | 174 | 180 | 186 | 192 | 197 | 204 |
| 65             | 114 | 120 | 126 | 132 | 138 | 144 | 150 | 156 | 162 | 168 | 174 | 180 | 186 | 192 | 198 | 204 | 210 |
| 66             | 118 | 124 | 130 | 136 | 142 | 148 | 155 | 161 | 167 | 173 | 179 | 186 | 192 | 198 | 204 | 210 | 216 |
| 67             | 121 | 127 | 134 | 140 | 146 | 153 | 159 | 166 | 172 | 178 | 185 | 191 | 198 | 204 | 211 | 217 | 223 |
| 68             | 125 | 131 | 138 | 144 | 151 | 158 | 164 | 171 | 177 | 184 | 190 | 197 | 203 | 210 | 216 | 223 | 230 |
| 69             | 128 | 135 | 142 | 149 | 155 | 162 | 169 | 176 | 182 | 189 | 196 | 203 | 210 | 216 | 223 | 230 | 236 |
| 70             | 132 | 139 | 146 | 153 | 160 | 167 | 174 | 181 | 188 | 195 | 202 | 209 | 216 | 222 | 229 | 236 | 243 |
| 71             | 136 | 143 | 150 | 157 | 165 | 172 | 179 | 186 | 193 | 200 | 207 | 214 | 221 | 228 | 235 | 242 | 249 |
| 72             | 140 | 147 | 154 | 162 | 169 | 177 | 184 | 191 | 199 | 206 | 213 | 221 | 228 | 235 | 242 | 250 | 258 |
| 73             | 144 | 151 | 159 | 166 | 174 | 182 | 189 | 197 | 204 | 212 | 219 | 227 | 235 | 242 | 250 | 257 | 265 |
| 74             | 148 | 155 | 163 | 171 | 179 | 186 | 194 | 202 | 210 | 218 | 226 | 234 | 242 | 249 | 256 | 264 | 272 |
| 75             | 152 | 160 | 168 | 176 | 184 | 192 | 200 | 208 | 216 | 224 | 232 | 240 | 248 | 256 | 264 | 272 | 279 |
| 76             | 156 | 164 | 172 | 180 | 189 | 197 | 205 | 213 | 221 | 230 | 238 | 246 | 254 | 262 | 271 | 279 | 287 |

[Go to Table 2]
Get ready for game day with the latest player stats, real-time score updates, and 3D stadium views.
Body mass index (BMI) is a measure of body fat based on height and weight that applies to adult men and women.

- Enter your weight and height using standard or metric measures.
- Select "Compute BMI" and your BMI will appear below.

BMI Categories:
- Underweight = <18.5
- Normal weight = 18.5–24.9
- Overweight = 25–29.9
- Obesity = BMI of 30 or greater

The BMI Tables

Aim for a Healthy Weight:
- Limitations of the BMI
- Assessing Your Risk
- Controlling Your Weight
- Recipes

Download the BMI Calculator iPhone App

Note: If this does not work with your browser or for a text alternative to this page, go to our CGI-based BMI Calculator.
Definition of Obesity

• BMI approximates with the amount of body fat, BMI does not directly measure body fat. As a result, some people, such as athletes, may have a BMI that identifies them as overweight even though they do not have excess body fat.

• Other methods of estimating body fat and body fat distribution include measurements of skinfold thickness and waist circumference, calculation of waist-to-hip circumference ratios, and techniques such as ultrasound, computed tomography, and magnetic resonance imaging (MRI).
Basic Science-summary

• BMI is not perfect as measurement of body fat, but it’s the best we have.
• Calculation is readily available.
• 30 is the cut off for obesity.
Obesity: What’s Happening to America?

- Basic Science
- **Extent of the problem**
- Underlying causes
- Test your knowledge
Extent of the problem

OBESITY IN AMERICA

By Geoffrey Cowley & Sharon Begley
Obesity Trends* Among U.S. Adults
Obesity Trends* Among U.S. Adults
BRFSS, 1985

(*BMI ≥30, or ~ 30 lbs. overweight for 5’ 4” person)
Obesity Trends* Among U.S. Adults
BRFSS, 1986

(*BMI ≥30, or ~ 30 lbs. overweight for 5’ 4” person)
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BRFSS, 2008

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Obesity Trends* Among U.S. Adults

(*BMI ≥30, or about 30 lbs. overweight for 5’4” person)
The problem with obesity in America is more than a geographic problem
And it’s more than an evolution problem
And it’s more than an evolution problem
Health effects of obesity

- High blood pressure
- Dyslipidemia (e.g., high total cholesterol or high levels of triglycerides)
- Type 2 diabetes
- Coronary heart disease
- Stroke
- Gallbladder disease
- Osteoarthritis
- Sleep apnea and respiratory problems
- Some cancers (endometrial, breast, and colon)
- Obesity is associated with various co-morbid conditions.

Dietz, NEJM 2005, 352:1200
Leading causes of death in the U.S.

**Leading Causes of Death, United States**

- Cardiovascular
- Cancer
- Stroke
- Bronchitis/emphysema
- Unintentional injuries
- Diabetes
- Influenza/pneumonia
- Alzheimer's disease
- Nephritis/nephrotic
- Septicemia

Percentage (of all deaths)
Leading causes of death in the U.S.

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- Septicemia

**Actual Causes of Death, United States**

- Tobacco
- Poor diet/lack of exercise
- Alcohol
- Microbial agents
- Pollutants/toxics
- Motor Vehicles
- Firearms
- Sexual Behaviors
- Illicit drug use

Percentage (of all deaths)
GM costs for weight & additional risk factors

Average annual paid healthcare costs (including pharmacy), 1997 - 2000; N = 222,933
GM costs for weight & additional risk factors

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Average annual paid healthcare costs (including pharmacy), 1997 - 2000; N = 222,933
BMI

Average annual paid healthcare costs (including pharmacy), 1997 - 2000; N = 222,933

GM costs for weight & additional risk factors

$0
$1,000
$2,000
$3,000
$4,000
$5,000
$6,000
$7,000

BMI <25
BMI 25-30
BMI 30-35
BMI >35

BMI Only
BMI +1 Risk
BMI +2 Risks
BMI +3 Risks
BMI +4 Risks
BMI +5 Risks
BMI +6 or more

$0
$1,000
$2,000
$3,000
$4,000
$5,000
$6,000
$7,000

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Average annual paid healthcare costs (including pharmacy), 1997 - 2000; N = 222,933
Extent of the Problem
(in summary)

• Increasingly obese country
• Significant contributor to various medical illnesses
• Significant contributor to mortality
• Significant contributor to rising health costs
Obesity: What’s Happening to America?

• Basic Science
• Extent of the problem
• **Underlying causes**
• Test your knowledge
"WE HAVE MET THE ENEMY AND HE IS US."

— Pogo
7-Eleven annual sales $15 billion/year
(North American)
7-11 Fountain Drinks

- 32 oz
- 44 oz
- 52 oz
- 64 oz

Sugar content: 48 teaspoons!
Hardee’s sales 2010 ~ $1.2 billion/year
5th largest U.S. fast food chain
Hardee’s “Monster Thickburger”

- Introduced in Nov 2004
- Hardee’s: “a monument to decadence”
- Two 1/3-lb slabs of Angus beef
- 4 strips of bacon
- 3 slices of cheese
- Mayonnaise
- Buttered sesame-seed bun

- Calories: 1,420
- Grams of fat: 107
Burger King revenue ~$2.4 billion/year
2nd largest hamburger fast food chain
Burger King’s
“Enormous Omelet Sandwich”

• Introduced in March 2005
• Burger King: “So big, breakfast will never be the same.”
• 2 slices of cheese
• 2 “fluffy” eggs
• 3 strips of bacon
• Sausage patty
• Toasted bun

• Calories: 730
• Grams of fat: 47
Heart Attack Grill (Dallas, TX)

- 4 cheeseburgers: the Single, Double, Triple, and Quadruple Bypass

- Quadruple Bypass
  - 4 half-lb beef patties
  - 4 pieces of cheese
  - Mound of bacon

- Waitresses wear “naughty nurse” uniforms
Heart Attack Grill (Dallas, TX) (continued)

• “Flatliner Fries” — boiled in pure lard
• Customers are called “patients”
• If “patients” finish a Triple or Quadruple Bypass, the waitresses will push them out to their cars in wheelchairs at no additional charge
Barbie 1959 version
Barbie today’s version
Have a nice summer.
A Year of Soda: 44.7 Gallons

Here’s what carbonated soft drink consumption — sugared and diet sodas — looked like in 2010. The average American chugged the equivalent of 48 two-liter bottles and 206 12-ounce cans of soft drinks (one of many possible container combinations that add up to about 44.7 gallons):
Underlying Causes

(summary)

• Complacent and uninformed Americans
• Corporate America; Madison Ave
• You and me (and all parents).
Obesity: What’s Happening to America?

- Basic Science
- Extent of the problem
- Underlying causes
- **Test your knowledge**
  - **Question #1** easy
  - **Question #2** more difficult
  - **Question #3** toughest so far
  - **Question #4** major challenge
Young Couple, first visit; considering 2\textsuperscript{nd} child; advice

- Husband BMI 35 kg/m\textsuperscript{2}; HBP
- Wife BMI 32 kg/m\textsuperscript{2}; gestational diabetes with 1\textsuperscript{st} child;
- Their 1\textsuperscript{st} child’s BMI for age @ 90 percentile
- They are considering pregnancy #2 and ask for advice on helping child #2 avoid weight gain.
The best advice to give them is:

1. Obtain genetic counseling and take action based on the results.

2. Remove from the home: TV, video games, and high glycemic foods.

3. After delivery have the child undergo endocrine testing. Look for hypothyroidism, and considering ruling out Cushing’s Syndrome, GH deficiency, and other endocrine based disorders.

4. Try to avoid excessive weight gain in pregnancy.
1. Obtain genetic counseling and take action based on the results.

- Don’t suggest it!
- Although heritable factors are responsible for 30-50% of the variations in adiposity, most of the genetic polymorphisms have not been identified.
- Specific syndromes are rare and account for less than 1% of cases of childhood obesity.

2. Remove from the home: TV, video games, and high glycemic foods.

• Amount of time spent watching TV is directly related to prevalence childhood obesity
  • Dietz, "Do We Fatten our Children at the TV?" Pediatrics, 1985 75:807;
  • Gortmaker “TV Viewing Arch Pediatric Adolescent Med 1996, 150:356,
  • Kaur, Duration of TV Watching J Pediatric 2003 143:506

• Video games during childhood are associated with obesity but weaker association than TV

• Sugar containing beverages and high glycemic foods causal influence on rise in obesity.

• Impractical; not recommended.
3. After delivery have the child undergo endocrine testing. Look for hypothyroidism, and considering ruling out Cushing’s Syndrome, GH deficiency, and other endocrine based disorders.

- Endocrine causes of obesity is identified in less than 1% of cases.
  - Reinehr et al; “Definable Somatic Disorders in Overweight Children and Adolescents;” J Pediatrics 2007; 150:618

- Would only be done if there are indications for further testing based on individual examination (such as short stature and/or hypogonadism).

- not done on a routine basis.
4. Try to avoid excessive weight gain in pregnancy since it tends to predict childhood weight.

- A mother’s weight gain during pregnancy is an important predictor of the child’s birth-weight even after accounting for genetic and other prenatal environmental factors.
  

- Population studies confirm an association between birth-weight and future obesity (as well as subsequent insulin resistance).
  
  Chiavaroli, “Insulin Resistance in Children Born Small and Large for Gestational Age;” Pediatrics 2009 124;695
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4. Try to avoid excessive weight gain in pregnancy.
Question #2
10 years later, the couple return for follow-up.

• The husband’s BMI is 41 kg/m². Dx: HBP, AODM

• The wife c/o years trying to lose weight, various diets (none successful).

• Both are frustrated and want help with weight loss.

• You sense they want Rx or, at least, something more than “advice.”
What is the best suggestion to help them:

1. Before advancing to a prescription medication, have them purchase some of the herbal meds or dietary supplements and ascertain their effectiveness.

2. Offer a sympathomimetic agent with the caution that it may take up to 4 months to work.


4. Remind them that Orlistat is approved and available OTC, but it rarely works beyond a few months.

Time to Vote
1. Before advancing to a prescription medication, purchase some of the herbal meds or dietary supplements and have them ascertain their effectiveness.
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- No outcomes-based evidence that any of the herbal medicines impact weight loss

- **Green tea: no proven benefit for weight loss**

- **Chitosan: no proven benefit for weight loss**

- **Garcinia: no proven benefit for weight loss**

- **Unlike other OTC products, dietary supplements are exempted from FDA oversight**
  - 1995 Dietary Supplement and Health Act exempts dietary products form FDA scrutiny
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    - Nagao T, Hase T, Tokimitsu I. A green tea extract high in catechins reduces body fat and cardiovascular risks i 2007;15:1473-83.4

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2. Offer a sympathomimetic agent with the caution that it may take up to 4 months to work.
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- All of the sympathomimetic drugs are approved for short term use only (<12 weeks).
- All FDA schedule III or IV.
- Troublesome side effects which include: dry mouth, constipation, insomnia, and increases in BP.
<table>
<thead>
<tr>
<th>Agent</th>
<th>Mechanism of Action</th>
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<td>25 mg tid with meals or 75 mg controlled release in AM</td>
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<td>25 or 50 mg before breakfast</td>
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Orlistat

Lipase inhibitor

120 mg tid

Weight loss

Increases fecal fat loss

Nonscheduled; FDA-approved for long-term use and maintenance

FDA = Food and Drug Administration; OTC = over the counter; tid = three times daily.

Annals of Internal Medicine; October 7, 2008 vol. 149 no. 7 ITC4-1

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### Drug Treatment for Obesity

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3. Suggest bariatric surgery for the husband

- ACP recommends Bariatric Surgery be considered as a treatment option if the BMI is >40 kg/m²
- Exercise and diet should have failed (+/- drugs).
- Particularly advisable if co-morbid conditions exist (HBP, DM, hyperlipidemia, obstructive sleep apnea).

4. Remind them that Orlistat is approved and available OTC, but it rarely works beyond a few months.

- 70% of patients achieve >5% weight loss and 70% maintain the weight loss for 2 years.

- Orlistat tends to decrease LDL-Cholesterol more than that expected with weight-loss alone

- Lowers levels of fat soluble vitamins; so replacement needed
10 years later the couple return for follow-up;

- The husband’s BMI is 41 kg/m², Dx: HBP, AODM
- The wife c/o years trying to lose weight, various diets (none successful)
- Both are frustrated and want help with weight lose.
- You sense they want Rx or, at least something more than “advice.”
What is the best suggestion to help them:

1. Before advancing to a prescription medication, have them purchase some of the herbal meds or dietary supplements and ascertain their effectiveness.

2. Offer a sympathomimetic agent with the caution that it may take up to 4 months to work.


4. Remind them that Orlistat is approved and available OTC, but it rarely works beyond a few months.

Husband’s BMI 41

<12 weeks

2 years
Bariatric surgery: risks vs. benefits

- Mortality <1%; Adverse events ~20%, most are minor
  - Maggard et al., *Annals Internal Medicine* 205: 142-547
- Patients can expect ~60% loss of excess weight
  - Buchwald et al., *JAMA* 2004; 292:1724
- 1) DM resolved in 77%; improved 86%; 2) Hyperlipidemia improved in 70%, 3) HBP resolved in 62%
- Reduction in comorbidities translate to a 29% reduction in mortality
  - Sjostrom et al. *NEJM* 2007; 357:741
- Surgically treated patients use significantly less (CV and DM) medication @ 2 & 6 years compared to controls.
  - Agren et al., *Int J Obes Rela Metab Disor* 2002;26:1184
- Medication costs are significantly less for surgical patients compared to controls. Narbo et al. *Arch Intern Med* 2002;162:2061
Question # 3
20 years go by. The husband, now in his late 60s, schedules an office visit to again review his options for weight loss. In the midst of your frustration, you decide to do the following three things:

- Double your PPI dose given the sudden rise in your stomach acid
- Turn things over to your NP
- Retrain in radiology.
You suddenly have a change of heart when your NP tells you Medicare will pay you for providing counseling for obesity. In order to be paid by MC, you must:

1. Have a patient with a BMI > 35
2. Hold 3-weekly sessions, at least 20 minutes in duration
3. Document the BMI and weight loss amount in the medical record
4. Have previously completed the Medicare Annual Wellness Visit
5. All of the above.
Counseling for Obesity; new 2012

• All Medicare beneficiaries with a BMI >30 qualify.
• Limited to primary care providers in Dr’s office.
• Regulations stipulate: 1) measure BMI; 2) do a nutritional assessment; 3) behavioral counseling and therapy to promote weight loss.
• Use code G0447 [face-to-face counseling for 15 minutes].
Counseling for Obesity; new 2012 Medicare will cover:

- One face-to-face visit weekly for the 1st month
- One face-to-face visit every other week; months 2-6
- If beneficiary has lost at least 3Kg (≈6.6lb) end of 6 months, then one face-to-face monthly visit for months 7-12 will be covered
- If 6.6 lb. not lost, then wait 6 months and reset the clock
- Document time spent (15 minutes) in record.
Decision Memo for **Intensive Behavioral Therapy for Obesity (CAG-00423N)**

**Decision Summary**

The Centers for Medicare and Medicaid Services (CMS) has determined the following:

The evidence is adequate to conclude that intensive behavioral therapy for obesity, defined as a body mass index (BMI) ≥ 30 kg/m², is reasonable and necessary for the prevention or early detection of illness or disability and is appropriate for individuals entitled to benefits under Part A or enrolled under Part B and is recommended with a grade of A or B by the U.S. Preventive Services Task Force (USPSTF).
You suddenly have a change of heart when your NP tells you Medicare will pay you for providing counseling for obesity. In order to be paid by MC, you must:

1. have a patient with a BMI >30 BMI
2. Hold 3 weekly sessions, at least 20 minutes in duration 15 minutes +
3. Document the BMI and weight loss amount in the medical record
4. Have previously completed the Medicare Annual Wellness Visit
5. All of the above
Question # 4
Question #4

• The couple are now grandparents.
• They have a grandson named Winston.
• Based on the following video, there are a number of assumptions to be made.
Which is assumption is most likely true?

1. Grandma has overcome obesity.
2. Grandson Winston has overcome obesity.
3. Grape soda makes a difference.
4. In the battle to overcome obesity, we still have a lot to do.
In the battle to overcome obesity, we still have a lot to do.
The Challenge of Obesity in America: Options for Medical Treatment

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Thanks for listening.
Questions?
The Challenge of Obesity in America: Options for Medical Treatment

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Wisconsin Chapter meeting
September 9, 2012