

OBESITY: Root of (Most) Cardiometabolic Evils

Satellite Conference and Live Webcast
 Wednesday, March 5, 2008
 2:00-4:00 p.m. (Central Time)

Produced by the Alabama Department of Public Health
 Video Communications and Distance Learning Division

Faculty

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 Obesity Task Force of Alabama
 American Board of Bariatric Medicine
 American Board of Family Medicine

Obesity: The Problem

- OBESITY is excess fat.
 - NIH- 20% over IBW
 - BMI - >25 overweight, >30 obese
 - Neck in men >17 inches
 - Waist: over 40" men, over 35" women

Obesity: The Problem

- Dexa scan, underwater weighing, CT scan
 - Bod Pod
 - Bioimpedance scale measurements
 - Pinch tests

Weight (Pounds)	Height (Feet and Inches)																
	5'0"	5'1"	5'2"	5'3"	5'4"	5'5"	5'6"	5'7"	5'8"	5'9"	5'10"	5'11"	6'0"	6'1"	6'2"	6'3"	6'4"
100	20	19	18	18	17	17	16	16	15	15	14	14	14	13	13	12	12
105	21	20	19	19	18	17	17	16	16	15	15	14	14	13	13	12	12
110	21	21	20	19	18	18	17	17	16	16	15	15	14	14	13	13	12
115	22	22	21	20	20	19	18	17	17	16	16	15	15	14	14	13	12
120	23	23	22	21	21	20	19	18	18	17	17	16	16	15	15	14	13
125	24	24	23	22	21	21	20	19	18	18	17	17	16	16	15	15	14
130	25	25	24	23	22	22	21	20	19	19	18	18	17	17	16	16	15
135	26	26	25	24	23	22	22	21	21	20	19	19	18	18	17	17	16
140	27	26	26	25	24	23	23	22	21	21	20	20	19	19	18	18	17
145	28	27	27	26	25	24	23	23	22	21	21	20	20	19	19	18	18
150	29	28	27	27	26	25	24	23	23	22	22	21	20	20	19	19	18
155	30	29	28	27	27	26	25	24	24	23	22	22	21	20	20	19	19
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185	36	35	34	33	32	31	30	29	28	27	27	26	25	24	24	23	23
190	37	36	35	34	33	32	31	30	29	28	27	26	26	25	24	24	23
195	38	37	36	35	34	33	32	31	30	29	28	27	26	26	25	24	24
200	39	38	37	36	35	34	33	32	31	30	29	28	27	26	26	25	24
205	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	26	25
210	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	26
215	42	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26
220	43	42	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27
225	44	43	42	41	40	39	38	37	36	35	34	33	32	31	30	29	28
230	45	44	43	42	41	40	39	38	37	36	35	34	33	32	31	30	29
235	46	45	44	43	42	41	40	39	38	37	36	35	34	33	32	31	30
240	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	32	31
245	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	32
250	49	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33
255	50	49	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34
260	51	50	49	48	47	46	45	44	43	42	41	40	39	38	37	36	35

Underweight
 Weight Appropriate
 Overweight
 Obese

Abdominal Adipose Tissue (FAT)

- Two types
 - Subcutaneous fat deposits
 - Intra-abdominal fat
 - Retroperitoneal or extra-peritoneal fat
 - Intra-peritoneal or VISCERAL FAT
 - Mesenteric and Omental Fat

Visceral Fat

- Secretes higher levels of adipokines than subQ fat
- Products go directly to the liver via the portal system
- Waist circumference is an excellent estimate of visceral fat

Visceral Fat Predictor of CVD

- INTERHEART study determined that waist circumference was a more powerful predictor of obesity-associated CVD risk than any other single measure of obesity, e.g., BMI
- Nurse's Health Study showed waist circumference as a strong independent predictor of Type 2 DM

Adipose Tissue is an Endocrine Organ

- Highly active metabolic and endocrine organ affecting fatty acids
- Secretes cytokines, inflammatory mediators, adipokines
- Has receptors which react to other hormones
- Responds to central nervous system stimuli

Adipose Tissue Adipokines

- Adiponectin
- Interleukin-6
- Tumor necrosis factor- α
- Plasminogen activator inhibitor-1
- Leptin

Adiponectin

- Antidiabetic
- Antiinflammatory
- Antiatherogenic
- Decreased in obese people especially abdominal obesity
- Significantly lower in people with Cardiometabolic Syndrome

Interleukin-6

- Proinflammatory
- 2-3x more from visceral vs SQ fat
- Modulates CRP from liver
- Decreases insulin and leptin receptor activity
- IL-6 is higher in obese and decreases with weight loss

Tumor Necrosis Factor-A

- Decreases glucose uptake
- Decreases fatty acid oxidation
- Increases expression of genes involved in new production of cholesterol and fatty acid
- Decreases insulin receptor sensitivity
- Elevated in obese

Plasminogen Activator Inhibitor-1

- Protein which inhibits fibrin breakdown
- Elevated in obesity and especially visceral obesity
- Weight loss reduces PAI-1

Leptin

- Hormone signaling energy sufficiency
- It does not signal energy excess
- Secretion directly proportional to fat mass
- Secretion decreases with starvation
- Obese have increased leptin levels but decreased receptor activity similar to “pre-diabetes”

Endocannabinoid System

- Obesity increases activity
- Modulates feeding behavior
- Increases hepatic fat production
- Decreases muscular uptake of glucose
- Decreases satiety signals leading to increased appetite and weight gain
- Acts similarly at the hypothalamus

Causes of Obesity

- Genetics, lifestyle, toxic food environment, lack of physical activity
 - SUPERSIZE ME
 - 43% adolescents watch more than 2 hr TV/day plus video, phone time
- Unsafe neighborhoods Hopscotch ?

Causes of Obesity

- French “non-paradox”
- Drug induced-elavil, provera, antiDM
- Neuroendocrine- PCOS, hypothyroidism
- Smoking cessation

Obesity and the Metabolic Syndrome

- **Metabolic syndrome: small abnormalities = serious medical disease**
 - BP > 130/85
 - Waist > 35” women, >40” men
 - Fasting TG > 150
 - FBS >100
 - HDL-C <50 women, <40 men

Obesity and the Metabolic Syndrome

- **Teen adiposity is greatest predictor of MS in adults (NHBL study 12, 16, 26)**
- **Diabetes, heart disease, kidney failure occur at an earlier age**

Info From You Carries “Weight”!

- **Ten % weight loss rule**
- **National Weight Control Registry**
- **1 soda/day, 10 lb/year**
- **Warnings about fad diets**
- **Pedometer and 10,000 steps/day**

Info From You Carries “Weight”!

- **“Fit Obese” BMI>27 can walk 20 min briskly and consumes 1000 Cal/wk in exercise**
- **1 meal replacement/day**
- **Exercise tapes from video stores**
- **Eliminate the small things**
- **Whole foods vs distillations**

Broaching the Subject

- **Include waist size as a Vital Sign**
- **Have a BMI chart on wall**
- **“Are you concerned about your weight?”**

Broaching the Subject

- **Chronic disease prevention or improvement in status of present disease**
- **Simple plan, write in chart, ask about progress each visit**
 - **EXAMPLE - Anti-smoking campaign**

Confused About Exercise?

- Aerobic or resistance training?
- Exercise before or after eating?
- Exercise in the morning or evening?
- Too old to exercise

Confused About Exercise?

- Too heavy to exercise
- Resistance will cause masculine muscles
- Exercise will cause more fatigue
- Exercise will increase appetite

Will All This Really Help?

**5-10% weight loss
will work
M-I-R-A-C-L-E-S!**

Example of Real People:

- RS, 40 y/o female, 5'3" tall
On 3/19 she was 166.8 LB
 - She eliminated donuts, sodas, chips
 - Exercise was walking 30 minutes on treadmill 3 times a week*On 4/11 she was 151 LB, lost 15.8 LB or 9.7%*

Example of Real People:

On 4/11 she was 151 LB, lost 15.8 LB or 9.7%

<u>3/19/04</u>	<u>4/11/05</u>
Total cholesterol 244	200
HDL-cholesterol 42 (low)	51
LDL-cholesterol 171 (high)	106
Triglycerides 157 (high)	120

Example of Real People:

FM, 42 y/o male, traveling salesman
6ft tall, 202 LB BP 146/100 (high)

He got scared!!

Diet changes at fast food, took the stairs, walked around at rest stops, used exercise rooms at motels, cut back to 1 alcoholic drink/day

Example of Real People:

His results:

<u>First visit</u>	<u>1 month later</u>
Total cholesterol 252	180
HDL-cholesterol 33 (very low)	38 (almost 40)
Triglyceride 463 (very high)	86
Blood pressure 146/100	126/82

LIFESTYLE CHANGES STRIKE AGAIN!

Prudent Lifestyle Changes Win You

The Nobelly Prize

Bariatric Surgery

- History of Bariatric Surgery
 - 50 years of experience
 - Performed in very high risk patients
 - Lifesaving procedure
 - Advances in technique
- American Society of Bariatric Surgeons

Who Qualifies for Surgery?

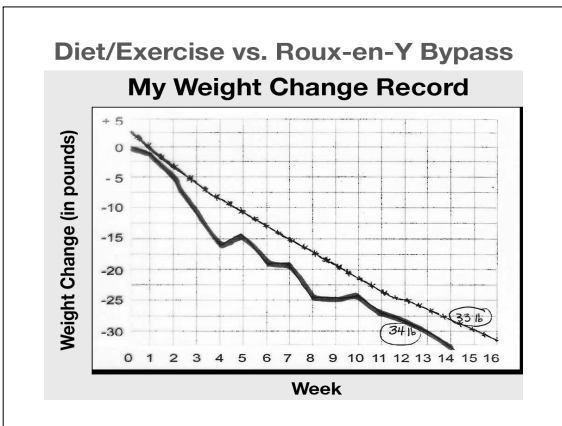
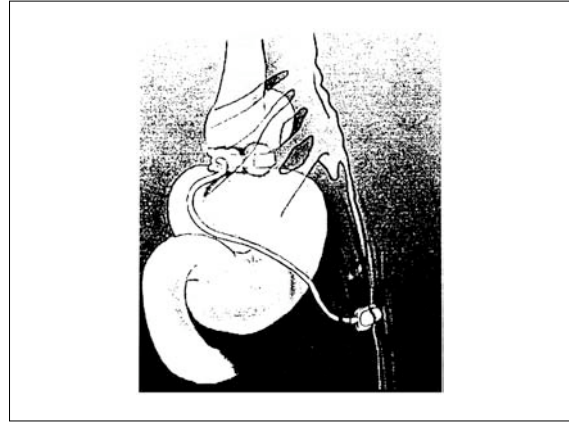
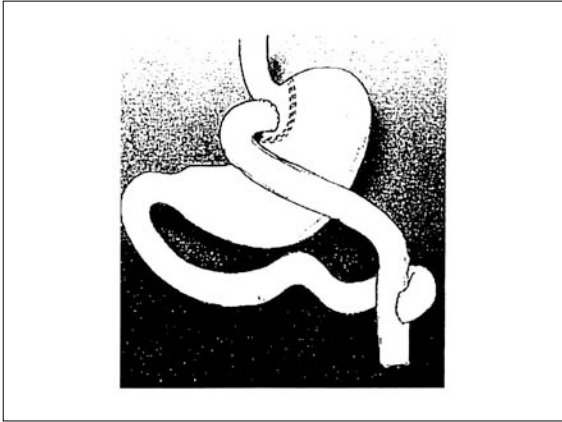
- \geq 200% IBW
- 100 pounds overweight
- BMI>40
- BMI>35 *plus* co-morbidities
- Voluntary weight loss has failed
- Stable, cooperative, able to tolerate surgery

How Does Surgery Cause Weight Loss?

1. Mechanical restriction of caloric intake
2. Malabsorption of nutrients in the GI tract by diversion of food
3. A combination of restriction and malabsorption

Roux-en-Y Gastric Bypass

- Most commonly performed today
- Both restrictive and malabsorptive
- Can be performed through laparoscope
- Has nutrient problems but easily treated
- Expect 60% of weight loss



- ### Eating Disorders
- Night eating
 - Anorexia nervosa
 - Binge eating

- ### MEDICATIONS
- Reduction of fat absorption:
Xenical, Alli
 - Appetite suppression: Ionamin,
Bontril, Meridia

**OBESITY is the Root of
 Cardiometabolic Evils!**

Thank you very much.

Myrtle E. Goore, MD

Upcoming Programs

**The Reasons For & Key Elements of
Continuity of Operations Planning
Thursday, March 27, 2008
12:00 - 1:30 p.m. (Central Time)**

**Generation Rx: The Adolescent
“Pharming” Phenomenon
Thursday, April 3, 2008
11:00 - 1:00 p.m. (Central Time)**

**For complete list of upcoming programs
visit: www.adph.org/alphn**

Upcoming Programs

**HIV/AIDS Update 2008 for
Home Health Aides & Attendants
Wednesday April 30, 2008
12:00 - 1:30 p.m. (Central Time)**

**For complete list of upcoming programs
visit: www.adph.org/alphn**