



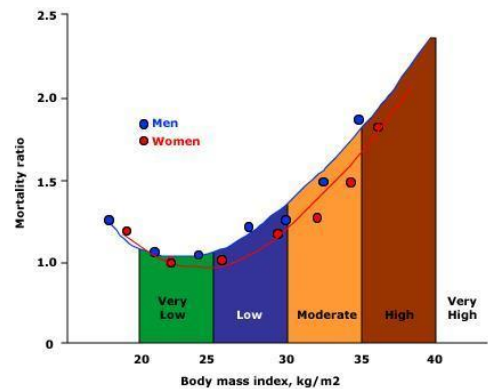
Fat Rats: The Physiology of Obesity

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*"Except for smoking,
obesity is now the number one
preventable cause of death in this country.
Three hundred thousand people die of
obesity every year."
~Dr. C. Everett Koop*

Obesity is a complex multifactorial disease that develops from the interaction between genotype and the environment. It involves the integration of social, behavioral, cultural, physiological, metabolic, and genetic factors.

Relation between mortality and body mass index



At a body mass index below 20 kg/m² and above 25 kg/m² there is an increase in relative mortality for men and women.

Data from Lew, EA. *Ann Intern Med* 1985; 103:1024.



1. Why now?
 - a. Epidemic
 - i. Increase in US
 - ii. Increase in our children
 - b. Consequences
 - i. Chronic disease
 - ii. Preventable cause of death
 - iii. Threat to children
 - iv. High Medical costs
 - c. Are you obese?
 - i. BMI = weight (kg)/ height (meters) squared
= weight (lbs) x 703/ height (inches) squared
 - ii. BMI >25 overweight
 - iii. BMI >30 obese
 - iv. BMI > 40 (or >35 with diabetes, sleep apnea) severely obese

Thou seest I have
more flesh than another man,
and therefore more frailty.
~William Shakespeare

- v. If BMI < 35, look at waist circumference
 1. Independent risk factor in BMI 25 to 34.9
 2. High circumference associated with increased risk of DM II, dyslipidemia, hypertension, CVD
 - a. Men > 40 inches, Women > 35 inches

2. Why gastroenterology?

- a. Nutrition & the absorption process should be our concern
- b. Effects of obesity on the GI system

Esophagus

GERD symptoms 50%

Erosive esophagitis 50-100%

Barrett's esophagus 2-fold (Abdominal obesity)

Esophageal adenocarcinoma 2-fold

Gallbladder

Stones 2-3 fold (More in women)

Cancer 35-85% (More in women)

Pancreas

Cancer 35-85% (Abdominal obesity)

Worse acute pancreatitis 20-50%

Colon

Adenoma (especially advanced) 50-100%

Cancer 2-fold Colon (not rectum) (More in men, more with abdominal obesity)

Liver

Non alcoholic fatty liver disease 2-3 fold (Abdominal obesity)

Advanced HCV-related disease 50%

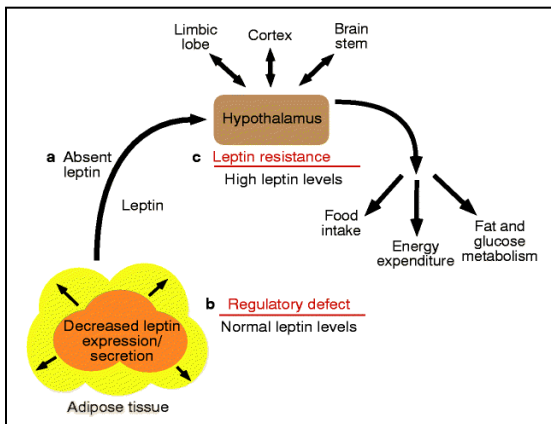
Cirrhosis 30-50%

Hepatocellular carcinoma 30-50%

(Risk of GI Disease Associated with Obesity, Hashem B. El-Serag, MD, MPH, from ACG Guide)

By today's beauty standards, of course,
Marilyn Monroe
was an oil tanker.
~ Dave Barry

3. Physiology: or, Fat Rats!



From Leptin and the regulation of body weight in mammals, Friedman JM Halaas JL, Nature 395, 763-770(22 October 1998)

4. Treatment: Weighing the Options

- a. Set realistic goals
 - i. 10% reduction in body weight in 6 months of therapy
 - 1. Plan loss at 1-2 lbs per week
 - a. "A greater rate of weight loss does not yield a better result at the end of one year" ('Practical Guide')
 - b. Difficult to continue weight loss at 6 months because of changes in baseline metabolic rate and adherence
 - i. Shift to maintenance
 - 1. Success= regain < 6.6 lbs in 2 years
 - 2. If wish to continue weight loss after a period of maintenance, reset goals and repeat process.
 - a. > 80% who lose weight eventually regain it; maintenance program essential.

I guess I don't so much mind being old,
as I mind being fat and old.
~ Benjamin Franklin

- b. Acknowledge "Obesogenic Environment"
 - i. Behavioral management
 - 1. Social support, Cognitive restructuring, Stimulus control, Stress Management, Self Monitoring, Problem solving, Contingency management
 - 2. www.AmIHungry.com self-awareness satiety program
 - 3. Brief Behavioral Assessment
 - a. Has the individual sought weight loss on his/her own initiative?
 - b. What events have led the patient to seek weight loss now?

- c. What are the patient's stress levels and mood?
- d. Does the individual have an eating disorder, in addition to obesity?
 - i. 20-30 % patients seen at university clinics for obesity suffer from binge eating
- e. Does the individual understand the requirements of treatment and believe that he/she can fulfill them?
- f. How much weight does the individual expect to lose?
 - i. Most wish to lose 2-3 x the 8-15% expected weight loss, and become disappointed if goals are not realistic.

c. Diet and Exercise

- i. Expectations: induction and maintenance of 10% initial weight, amelioration of hypertension and DM II

- 1. Over six months, then re-assess and set new goal.

ii. Diet

- 1. 1000-1200 kcal/day for women, 1200-1600 for men
 - a. 500-1000 kcal/day reduction from usual intake
- 2. Fat < 30% total calories
- 3. Protein 15% total calories
- 4. Carbohydrates 55% total calories, complex carbs best (vegetables, fruits, whole grains)
 - a. Avoid VLCD (Very Low Calorie Diet) <800 kcal/day

Life expectancy would grow by leaps and bounds if green vegetables smelled as good as bacon.
~ Doug Larson



iii. Exercise

- 1. "An increase in physical activity is an important component of weight loss therapy, although it will not lead to a substantially greater weight loss than diet alone over six months." ('Practical Guide')
 - a. Set goal of ~150 minutes weekly
 - b. 30-45 minutes, 3 to 5 days per week
 - c. Reduce sedentary time
 - d. Budget time weekly to allow exercise
- 2. "Sustained physical activity is most helpful in the prevention of weight regain." ('Practical Guide')

d. Medications

- i. For BMI >27 with comorbidities, or > 30 without
 - 1. Use only as part of comprehensive program including behavioral modification, diet, and exercise
 - a. Dexfenfluramine and fenfluramine withdrawn 09/1997 due to regurgitant valvular heart lesions
- ii. Prescription medications
 - 1. Grade 2A EBM recommendation, as adjunct to diet/exercise
 - a. Not for short term use

- i. Over 2/3 Americans "trying to lose or maintain weight"
- ii. Only 20% both eating fewer calories and doing >150 minutes physical activity per week
- iii. < $\frac{1}{2}$ obese advised to lose weight by health care professionals
 1. Behavior modification, diet, exercise for all
 2. if BMI > 27, consider medications
 3. If BMI > 35 with comorbidities, consider surgery

Dr. Patricia Raymond takes medicine seriously...and herself lightly.

She delivers YourHealthChoice radio's fun and funny 2 minute health tips across the country and by podcast daily, leading lighthearted discussion of weighty medical matters, and writes for the Journal of Nursing Jocularly (JNJ) and Endonurse magazines. Her story "Strong Medicine" is featured in *Chicken Soup for the Caregivers Soul* and her piece on screening colonoscopy "Look Deep Within" is in the amusing anthology *Fifty Things to Do at Fifty*. If you catch her when she's loosened up, she may perform her 'Divine Butt Meddler' impression for you (featuring the smash hit, "The Wind Between Your Cheeks").

Raymond practices patient-centered Gastroenterology in Virginia Beach Virginia (wwwSimplyScreening.com), speaks to medical groups worldwide (wwwRxForSanity.com), and is a member of the prestigious National Speakers Association.

Sign up for your FREE fun medical e-newsletter today at RxForSanity.com!

Resources :

Obesity trends in America slides from the CDC at
<http://www.cdc.gov/obesity/data/trends.html>

American College of Gastroenterology. Obesity: A Dangerous and Growing Public Health Challenge.
http://www.acg.gi.org/obesity/pdfs/ACG_Obesity_Physician_Resource_Guide.pdf

ACG tools for the fight against obesity: Here you'll find pamphlets, posters, dietary diaries. What you need to get started with your patients:
<http://www.acg.gi.org/obesity/index.asp#tools>

The Practical Guide: Identification, Evaluation, and Treatment of Overweight and Obesity in Adults http://www.nhlbi.nih.gov/guidelines/obesity/prctgd_b.pdf

Gastrointest Endosc Clin N Am. 2007 Jul;17(3):545-57, vii. Endoscopic bariatric procedures and devices. Hashiba K.

Body Mass Index Calculators Online BMI calculator using either Standard or Metric measures. <http://www.nhlbisupport.com/bmi/>

