Weight Management in the Office: A practical approach to treating the obese patient

May 11, 2005

Marisa Rogers MD
Jane Sillman MD
Ann Smith Barnes MD
• Introduction
• Evaluation
  – The Patient Visit
  – Assessing Readiness for Weight Loss
  – Setting Realistic Weight Loss Goals
• Treatment Options
  – Lifestyle Modifications
  – Pharmacotherapy
  – Surgical Options
• Resources
• Conclusions
• Questions and Comments
Introduction
Goals of Precourse

• Practical approach to weight loss in the primary care physician’s office
  – Assess readiness to lose weight
  – Assist in patient motivation
  – Perform obesity evaluation
  – Set weight loss goals
  – Counsel patient regarding lifestyle modifications
  – Use pharmacotherapy when appropriate
  – Counsel regarding surgical options
Extent of the Problem

- 108 million? people in US overweight or obese
- 65% of adults overweight or obese
- 30% obese
- higher in minority and low income populations
- 2nd leading cause of preventable death in US
Obesity Trends* Among U.S. Adults
BRFSS, 1985

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

Source: Behavioral Risk Factor Surveillance System, CDC.
Obesity Trends* Among U.S. Adults
BRFSS, 1986
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Source: Behavioral Risk Factor Surveillance System, CDC.
Obesity Trends* Among U.S. Adults
BRFSS, 2000

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

Source: Behavioral Risk Factor Surveillance System, CDC.
Obesity Trends* Among U.S. Adults
BRFSS, 2001
(*BMI ≥30, or ~ 30 lbs. overweight for 5’ 4” person)

Source: Behavioral Risk Factor Surveillance System, CDC.
Obesity Trends* Among U.S. Adults

BRFSS, 2002

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

Source: Behavioral Risk Factor Surveillance System, CDC.
Obesity Trends* Among U.S. Adults

BRFSS, 2003

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

Source: Behavioral Risk Factor Surveillance System, CDC.
Obesity Trends* Among U.S. Adults
BRFSS, 1985
(*BMI ≥30, or ~ 30 lbs. overweight for 5’ 4” person)

Source: Behavioral Risk Factor Surveillance System, CDC.
Consequences of Obesity

- Hypertension
- Dyslipidemia
- Type 2 diabetes
- CHD
- Stroke
- Gall bladder disease
- Osteoarthritis
- Sleep apnea
- Cancer (endometrial, breast, prostate, and colon)

- Primary care and specialty visits
- Social stigma and discrimination
- Quality of life
- Increased mortality (may curtail gains in life expectancy)
Advantages of Weight Loss

- Decrease risk of type 2 diabetes
- Decrease blood pressure
- Improve lipids
- Decrease severity of sleep apnea
- Reduce symptoms of osteoarthritis
The Patient Visit
What we need to know: history

- Patient’s concerns
- Cardiac risk factors
- Comorbidities related to obesity
- Diet and exercise
Taking a diet history

- 24 hour food recall
- How often do you eat out?
  - What types of restaurants – buffets, fast food?
- What beverages do you usually consume?
- How do you prepare your meals?
What we need to know: physical exam

- Height and weight: look up BMI
- Blood pressure
- Waist circumference if BMI 25- <35
**Remember these BMIs**

<table>
<thead>
<tr>
<th>Weight</th>
<th>BMI</th>
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<tr>
<td>Overweight</td>
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<tr>
<td>Obese</td>
<td>30</td>
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<tr>
<td>Morbid obesity</td>
<td>40</td>
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</table>
Remember these waist circumferences

- Men > 40 in.
- Women > 35 in.
- Independent predictor of mortality if BMI 25 - < 35
What we need to know: labs

- Fasting lipid profile
- Fasting glucose
Who to Target

• Either **overweight** OR
  
  **increased waist circumference**
  
  **AND**
  
  \( \geq 2 \) cardiac risk factors

• **Obese**
Be an effective counselor

- Empathy facilitates change
- Confrontational counseling makes things worse
What to do: say the “0” word

- Tell patient the BMI and give the dx: “overweight” or “obese”
- Be nonjudgmental, supportive!!
Assess patient’s readiness to change

Prochaska and DiClemente stages of change model

• Precontemplation
• Contemplation
• Action
• Maintenance
Stages of change: precontemplation

- Not conscious
- Not educated
- Not ready to change
- “I eat like a bird..”
Stages of change: contemplation

- Considering change
- Ambivalent
- “I’d like to lose weight but...”
Stages of change: action

- Ready to change
- “I’m ready to work on losing weight.”
Stages of change: maintenance

- Lost weight in past 6 months
- Working on maintaining weight loss
Motivational Interviewing
Motivational interviewing (MI)

- Patient-centered, directive method for increasing motivation to change
- Helps patient explore, resolve ambivalence

Miller, Rollnick. Motivational Interviewing, 2nd ed
MI: 4 key elements

1. Express empathy
   - Acceptance
   - Reflective listening
   - Patient ambivalence is normal
2. Develop discrepancy

• Between patient’s goal and behavior
e.g. Wants to lose weight
   Eats sweets every day
• Patient should recognize the need for change
3. Roll with resistance

- Don’t argue for change
- Patient is primary resource in problem solving
- Resistance is a signal to respond differently
4. Express confidence that patient can change

• Your and patient’s belief that s/he can change helps the patient’s motivation

• Emphasize that the PATIENT is responsible for choosing, carrying out change
1st, assess motivation

• Ask “On a scale of 0 to 10, how interested are you in losing weight?”
If the answer is 10, ask…

• How will you do it?

• How can you arrange to have counseling more than once a month?
Help patient set a realistic goal

- Lose 1-2 pounds/week
- Moving from “obese” to “overweight”
- Emphasize health benefits
What to do if the answer is less than 10…

- “What would it take to become a 10?”
- “What is a change you could make now?”
  - Patient makes choice
  - Clinician supports patient
How to learn motivational interviewing

• Learn from each patient
  – Patient’s responses provide feedback
  – Increased “change” talk → good
  – Increased resistance → adjust your approach

• Get the Miller and Rollnick book
ROLE PLAY
Role play

• Break into pairs: one is the “obese patient” and one is the “clinician”
• Scene: end of the clinic visit
  “Clinician”: use BMI sheet to give diagnosis
  assess motivation
  get commitment to make a change
  “Patient”: give feedback about interview
• Reverse roles and repeat
Setting Realistic Weight Loss Goals
Setting Goals

- Unrealistic expectations
- Specific
- Attainable

- Prevent further weight gain
- Decrease body weight
- Maintain lower weight over long term
Initial Goal

Decrease body weight 10\% over 6 months

- BMI 27-35, decrease calories by 300 to 500/day to lose $\frac{1}{2}$ to 1 lb/week
- BMI >35, decrease by 500-1000/day to lose 1-2 lbs/week
Set Mini-Goals

- Weekly
- Monthly
- Not just weight loss goals
  - Clothes size goals
  - Activity goals (anecdote re me and 3 flights of stairs), pedometer
  - Dietary goals
  - Psychological goals – feeling better about one’s self
  - Blood pressure, blood glucose
Treatment Options
Lifestyle Modifications

- Dietary Therapy
- Activity Modification
Dietary Therapy Basics

- One size doesn’t fit all
- Awareness of food is essential
- Knowledge about food is key
- Calories out must exceed calories in
Use Resources

- Dietitians
- Weight loss programs
- Books
- Web resources
Nutrition basics

- Portion sizes
- Using a food diary
- What diet to recommend
- Practical tips
BAGEL

20 Years Ago

140 calories
3-inch diameter

Today

How many calories are in this bagel?

NHLBI website
Portion Distortion

BAGEL

20 Years Ago
140 calories
3-inch diameter

Today
350 calories
6-inch diameter

Calorie Difference: 210 calories

NHLBI website
FRENCH FRIES

20 Years Ago

210 Calories
2.4 ounces

Today

How many calories are in today’s portion of fries?

NHLBI website
FRENCH FRIES

20 Years Ago

210 Calories
2.4 ounces

Today

610 Calories
6.9 ounces

Calorie Difference: 400 Calories

NHLBI website
COFFEE

20 Years Ago
Coffee
(with whole milk and sugar)
45 calories
8 ounces

Today
Mocha Coffee
(with steamed whole milk and mocha syrup)

How many calories are in today's coffee?

NHLBI website
COFFEE

20 Years Ago

Coffee
(with whole milk and sugar)

Today

Mocha Coffee
(with steamed whole milk and mocha syrup)

45 calories
8 ounces

350 calories
16 ounces

Calorie Difference: 305 calories

NHLBI website
20 Years Ago

270 calories
5 cups

Today

How many calories are in today’s large popcorn?

NHLBI website
20 Years Ago

270 calories
5 cups

Today

630 calories
11 cups

Calorie Difference: 360 calories

NHLBI website
Servings on a plate

Fruit or Vegetables

Meat or protein

Carbohydrate
Portions Card

**Grain Products**
- 1 cup of cereal flakes = fist
- 1 pancake = compact disc
- ½ cup of cooked rice, pasta, or potato = ½ baseball
- 1 slice of bread = cassette tape
- 1 piece of cornbread = bar of soap

**Vegetables and Fruit**
- 1 cup of salad greens = baseball
- 1 baked potato = fist
- 1 med. fruit = baseball
- ½ cup of fresh fruit = ½ baseball
- ¼ cup of raisins = large egg

**Dairy and Cheese**
- 1½ oz. cheese = 4 stacked dice or 2 cheese slices
- ½ cup of ice cream = ½ baseball

**Meat and Alternatives**
- 3 oz. meat, fish, and poultry = deck of cards
- 3 oz. grilled/baked fish = checkbook

**Fats**
- 1 tsp. margarine or spreads = 1 dice
- 2 Tbsp. peanut butter = ping pong ball
Food Diary

• Awareness of what a person is eating
  – Underestimation is common
  – Identification of “trigger foods”

• Learn about calories

• Learn eating patterns – Identifying problem areas
  – Late-night snacks
  – Frequent eating out
Daily Food and Activity Diary

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<th>Monday</th>
<th>Tuesday</th>
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<th>Thursday</th>
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<td>Activity</td>
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</tbody>
</table>

**GOALS:**
- Diet
- Physical Activity
- Behavior

NHLBI The Practical Guide: Identification, Evaluation, and Treatment of Overweight and Obesity in Adults
Diet Madness

South Beach  DASH  Ornish

Weight Watchers  Slim-Fast

Jenny Craig  Sugar Busters

Atkins  Zone  Mediterranean  ADA
Meal Replacement

- Two meals good for weight loss
- One for maintenance
- Effective
- Can have high drop out rates
- Cost
- Very low calorie diets
Low-Carb Craze

• Result in weight loss
  – more than low-fat in short term
  – equal amount in long term
• Likely due to calorie restriction
• Difficult to maintain
Fad Diets

• Can use as a kick-start
• Most probably work due to decreased calories
• Not sustainable
• Better habits will be necessary
A More Balanced Approach

• NIH recommendations
  – 500-1000 kcal/d reduction
  – Fat ≤30% total calories
  – Protein 15%
  – Carbohydrates 55%
  – Sodium ≤2.4 grams
  – Calcium 1000-1500 mg
  – Fiber 20-30 grams

• DASH Diet
  – Whole grain products 6
  – Vegetables 3-4
  – Fruit 4
  – Low fat dairy 2-3
  – Meats, poultry fish 1-2
  – Nuts, seeds, dried beans 3/wk
  – Fats and oils 2
  – Sweets 0
American Dietetic Association
No matter what diet you choose remember it’s the calories that count!!!

To lose 1 pound per week, you must have a deficit of 500 kcal/day.

- 1200 kcal/day for women
- 1500 kcal/day for men
Practical Tips

- Eliminate fast food
- Watch what you drink
  - Reduce soda and juice intake
  - Moderate alcohol intake
  - Increase water intake
- Convey healthy food options
- Change diet gradually
- Food shopping tips
- Dining out tips
Activity Modification
Benefits to Exercise

• Increase cardiovascular fitness
• Lowers blood pressure
• Increase energy expenditure
• Greater weight loss than diet alone
• Increase lean body mass
Benefits to Exercise

- Boosts energy
- Helps in coping with stress
- Improves self-image
- Helps counter anxiety and depression
- Helps to relax and feel less tense
- Improves ability to fall asleep and sleep well
- Tones muscles so you look better
Getting Started

• Start slow
• Have fun
• Enlist family and friends
• Take a class
• Use community resources
  – recreation centers
  – walking paths/groups
  – charity walks
How to fit it in

• Use everyday opportunities
  – Take the stairs
  – Get off the bus early
  – Park farther away
• Wake up 30 minutes early
• Use lunch break
• Exercise during commercials or while watching TV
• Walk around the mall prior to shopping
• Walk down every aisle in the grocery store
Keys To Success

• Moderation
• Variety
• Frequent contact
• Support
• Self-monitoring
Pharmacotherapy for Weight Loss
Pharmacotherapy

- Who should get it?
- Over-the-counter medications
- Dexfenfluramine (Redux) and Phentermine and fenfluramine (Phen-fen)
- Fluoxetine
- Bupropion
- FDA approved medications
  - Phentermine
Pharmacotherapy

- Sibutramine (Meridia)
- Orlistat (Xenical)
Who should get weight loss medications?

- BMI of 27 and co-morbidities
- BMI ≥ 30
- Should always be given in addition to diet and exercise
- Ann’s rule: start medication only after 2-3 months of demonstrated effort with diet and exercise
Fluoxetine

- Also known as Prozac
- Antidepressant
- Mechanism: Selective serotonin reuptake inhibitor
- 60mg/d can induce up to 8 kg weight loss above diet and exercise alone at 6 months, but there is no statistical difference at 1 year of therapy
Bupropion

- Also known as Wellbutrin
- Antidepressant with stimulatory effects
- Mechanism: Norepi and dopamine reuptake inhibitor
- 300-400mg/d dose can induce 7-10% loss in body weight at 6 months with maintenance of 7-8.5% weight loss at 1 year.
Phentermine

- Appetite suppressant
- Mechanism: increases norepinephrine in the neurosynaptic cleft
- 30 mg/d dose can induce up to 13 kg weight loss in 9 months
- Side effects include agitation and insomnia
Sibutramine

- Appetite suppressant
- Mechanism: serotonin and norepinephrine reuptake inhibitor
- 10-15 mg/d dose can induce 10-15 lbs of weight loss at one year
- If 1% of weight loss is not achieved at 4 weeks of therapy, the drug should be discontinued
Sibutramine

• Benefits:
  – can improve lipid profile
  – with weight loss, can slightly improve blood pressure
  – with weight loss, can improve glycemic control

• Contraindications
  – Avoid with MAO inhibitors
  – Cautious use with TCAs, SSRIs, tryptans or if hx of seizure disorder
Sibutramine

• **Adverse effects**
  – headache
  – dry mouth, insomnia
  – increase in blood pressure
  – increase in heart rate

• **Weight loss maintenance**
  – at 2 years, most patients will maintain approximately 80% of the initial weight loss
Orlistat

• Lipase inhibitor
• Mechanism: blocks the absorption of up to 30% of dietary fat
• 120 mg TID can induce 10-12 lb weight loss at one year
Orlistat

• Benefits
  – improves LDL in excess of what is expected by weight loss alone
  – with weight loss can improve blood pressure
  – with weight loss can improve glycemic control

• Contraindications
  – Avoid when cholestasis or chronic malabsorb
  – Cautious use with Coumadin, Cyclosporine
Orlistat

• Adverse effects
  – decrease absorption of fat-soluble vitamins
  – soft, fatty stools
  – fecal urgency
  – flatus with anal leakage
Orlistat

- Gastrointestinal side effects usually resolve by 1-2 weeks of therapy
- Weight-loss maintenance
  - at 2 years, most patients will maintain approximately 65% of the initial weight loss
Pharmacotherapeutic Costs

<table>
<thead>
<tr>
<th>Medication and Dose</th>
<th>Weight Loss in Excess of Placebo, kg</th>
<th>Cost, per month/per year, $</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phenteramine 30 mg/d</td>
<td>7.9</td>
<td>60/720</td>
</tr>
<tr>
<td>Sibutramine 15 mg/d</td>
<td>4.3</td>
<td>116/1392</td>
</tr>
<tr>
<td>Orlistat 120mg TID</td>
<td>3.4</td>
<td>119/1428</td>
</tr>
</tbody>
</table>

adapted from Glazer, G. August 2001
Bariatric Surgery

What primary care physicians and internists need to know
Bariatric Surgery

- Screening patients
- Insurance coverage
- Goal of bariatric surgery
- Types of procedures
- Health outcomes
- Post-operative complications and care issues
Bariatric Surgery

- Screening patients
- Insurance coverage
- Goal of bariatric surgery
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Famous Bariatric Surgery Patients
Famous Bariatric Surgery Patients
Who is appropriate for bariatric surgery?
(NIH criteria adapted from Collazo-Clavell, Dec 1999)

- Obesity for at least 5 years
- BMI > 40 kg/m² or >35 kg/m² with 2 co-morbid conditions that would benefit from weight loss
  - DM, HTN, Dyslipidemia, steatohepatitis, CAD, OSA
- Failure of non-surgical methods
- Absence of significant psychopathology
Bariatric Surgery

- Screening patients
- Insurance coverage
- Goal of bariatric surgery
- Types of procedures
- Health outcomes
- Post-operative complications and care issues
Insurance coverage for bariatric surgery

• Surgeon will request a letter of necessity from the PCP which should include
  – BMI ≥ 35 with 2 co-morbid conditions or BMI ≥ 40
  – Obese ≥ 5 years
  – Attempted weight loss under physician’s care for ≥ 2 years (18 months)
  – Co-morbidities that merit consideration for medical necessity
Insurers that have covered bariatric surgery

- Aetna
- Medicaid
- Blue Cross/Blue Shield
- Medicare
Bariatric Surgery

• Screening patients
• Insurance coverage
• **Goal of bariatric surgery**
• Types of procedures
• Health outcomes
• Post-operative complications and care issues
Primary Goals of Bariatric Surgery

• Induce weight loss
  – Decrease size of stomach to limit intake
  – Decrease absorption of food eaten
• Improve existent cardiovascular risk factors
• Prevent the development of cardiovascular risk factors
• Improve morbidity and mortality
Bariatric Surgery

• Screening patients
• Insurance coverage
• Goal of bariatric surgery
• Types of procedures
• Health outcomes
• Post-operative complications and care issues
Types of Bariatric Procedures

Vertical-banded gastroplasty
(adapted from Presutti, Sept 2004)
Types of Bariatric Procedures

Adjustable silicone gastric banding
(adapted from Presutti, Sept 2004)
Types of Bariatric Procedures

Roux-en-Y gastric bypass
(adapted from Presutti, Sept 2004)
Bariatric Surgery

- Screening patients
- Insurance coverage
- Goal of bariatric surgery
- Types of procedures
- Health outcomes
- Post-operative complications and care issues
Benefits of Bariatric Surgery
(Presutti, Sept 2004)

• Improved glycemic control
• Improved blood pressure
• Improved ventricular function
• Improvement in symptoms of OSA
• Improved quality of life
• Reduction in depressive symptoms
• Reduced sick-leave and disability
Swedish Obese Subjects Study (SOS)

• **Goal:** to determine the preventive and treatment health effects of weight loss and maintenance over time

• **Method:** Matched individuals who lost weight by non-surgical methods to individuals who lost weight by surgical methods and compared them at 2 and 10 years
No. of Subjects

<p>|                | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control |
|----------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| No. of Subjects| 627     | 585     | 594     | 587     | 577     | 563     | 542     | 535     | 542     | 535     | 542     | 535     | 542     | 535     | 542     | 535     | 542     | 535     | 542     | 535     | 542     |
| Banding        | 156     | 150     | 154     | 153     | 149     | 150     | 147     | 144     | 147     | 144     | 147     | 144     | 147     | 144     | 147     | 144     | 147     | 144     | 147     | 144     | 147     |
| Vertical banded gastroplasty | 451 | 438     | 438     | 438     | 429     | 417     | 412     | 401     | 412     | 401     | 412     | 401     | 412     | 401     | 412     | 401     | 412     | 401     | 412     | 401     | 412     |
| Gastric bypass | 34      | 34      | 34      | 34      | 34      | 33      | 32      | 32      | 32      | 32      | 32      | 32      | 32      | 32      | 32      | 32      | 32      | 32      | 32      | 32      | 32      |</p>
<table>
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<tr>
<th>Variable</th>
<th>Changes at 2 Yr†</th>
<th>Changes at 10 Yr†</th>
<th>Changes at 10 Yr in Surgery Subgroups</th>
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<td>Control Group</td>
<td>Surgery Group</td>
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<td>(N=1660)</td>
<td>(N=1845)</td>
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<td>Diastolic blood pressure</td>
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<td>-5.2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2.4 to 3.9)</td>
<td></td>
<td></td>
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<tr>
<td></td>
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<td></td>
</tr>
<tr>
<td>Pulse pressure</td>
<td>3.2</td>
<td>0.6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(-2.3 to 1.3)</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glucose</td>
<td>5.1</td>
<td>-13.6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(15.0 to 18.3)</td>
<td></td>
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<tr>
<td></td>
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<td></td>
</tr>
<tr>
<td>Insulin</td>
<td>10.3</td>
<td>-46.2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(48.0 to 54.8)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Uric acid</td>
<td>-0.4</td>
<td>-14.9</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(12.5 to 14.6)</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Triglycerides</td>
<td>6.3</td>
<td>-27.2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(27.4 to 32.5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HDL cholesterol</td>
<td>3.5</td>
<td>-22.0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(-20.1 to -17.3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total cholesterol</td>
<td>1.0</td>
<td>-2.9</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.1 to 1.9)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Energy intake</td>
<td>-2.8</td>
<td>-28.6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(16.0 to 22.2)</td>
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</table>

* Data are for all subjects who completed 2 and 10 years of the study and are independent of diagnosis and medications at or after baseline. The changes within each treatment group are unadjusted, whereas the differences between the groups in the changes have been adjusted for sex, age, body-mass index (BMI), and the baseline level of the respective variable. CI denotes confidence interval, and HDL high-density lipoprotein.

† For values within each group, minus signs denote decreases; for differences between the groups, minus signs denote smaller reductions or (in the case of HDL cholesterol) larger increases in the surgical group than in the control group.

‡ P values are for the comparison with the banding subgroup.

§ P<0.001.

¶ P<0.05.

‖ P<0.10.
### Hypertriglyceridemia

<table>
<thead>
<tr>
<th>No. of subjects</th>
<th>Control</th>
<th>Surgery</th>
</tr>
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<tbody>
<tr>
<td>2 Yr</td>
<td>22</td>
<td>8</td>
</tr>
<tr>
<td>10 Yr</td>
<td>27</td>
<td>3</td>
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### Low HDL Cholesterol

<table>
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<tr>
<td>2 Yr</td>
<td>1174</td>
<td>440</td>
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<td>10 Yr</td>
<td>596</td>
<td>188</td>
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### Hypercholesterolemia

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<td>2 Yr</td>
<td>24</td>
<td>27</td>
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<td>10 Yr</td>
<td>27</td>
<td>30</td>
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<table>
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<tr>
<td>2 Yr</td>
<td>49</td>
<td>41</td>
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<tr>
<td>10 Yr</td>
<td>16</td>
<td>28</td>
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### Diabetes

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<td>2 Yr</td>
<td>8</td>
<td>1</td>
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<td>10 Yr</td>
<td>24</td>
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### Hypertension

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<td>2 Yr</td>
<td>29</td>
<td>24</td>
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<tr>
<td>10 Yr</td>
<td>49</td>
<td>41</td>
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### Hyperuricemia

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<tr>
<td>2 Yr</td>
<td>16</td>
<td>28</td>
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<td>10 Yr</td>
<td>4</td>
<td>17</td>
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<tr>
<td>2 Yr</td>
<td>1017</td>
<td>382</td>
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<tr>
<td>10 Yr</td>
<td>1044</td>
<td>342</td>
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<table>
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<th>No. of subjects</th>
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<th>Surgery</th>
</tr>
</thead>
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<td>2 Yr</td>
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<td>49</td>
</tr>
<tr>
<td>10 Yr</td>
<td>215</td>
<td>75</td>
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<table>
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<th>Surgery</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 Yr</td>
<td>0.15</td>
<td>0.34</td>
</tr>
<tr>
<td>10 Yr</td>
<td>0.15</td>
<td>0.34</td>
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</table>

<table>
<thead>
<tr>
<th>No. of subjects</th>
<th>Control</th>
<th>Surgery</th>
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</thead>
<tbody>
<tr>
<td>2 Yr</td>
<td>0.13</td>
<td>0.71</td>
</tr>
<tr>
<td>10 Yr</td>
<td>0.06</td>
<td>0.13</td>
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### Odds Ratio

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<th>Category</th>
<th>Control</th>
<th>Surgery</th>
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<tbody>
<tr>
<td>Hypertriglyceridemia</td>
<td>0.29</td>
<td>0.61</td>
</tr>
<tr>
<td>Low HDL Cholesterol</td>
<td>0.21</td>
<td>0.39</td>
</tr>
<tr>
<td>Hypercholesterolemia</td>
<td>0.14</td>
<td>0.21</td>
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### 95% CI

<table>
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<th>Surgery</th>
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<tbody>
<tr>
<td>Hypertriglyceridemia</td>
<td>0.21–0.41</td>
<td>0.39–0.95</td>
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<tr>
<td>Low HDL Cholesterol</td>
<td>0.14–0.32</td>
<td>0.29–1.15</td>
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<tr>
<td>Hypercholesterolemia</td>
<td>0.95–1.69</td>
<td>0.69–1.95</td>
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</table>

### P Value

<table>
<thead>
<tr>
<th>Category</th>
<th>Control</th>
<th>Surgery</th>
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<tbody>
<tr>
<td>Hypertriglyceridemia</td>
<td>&lt;0.001</td>
<td>0.03</td>
</tr>
<tr>
<td>Low HDL Cholesterol</td>
<td>&lt;0.001</td>
<td>0.12</td>
</tr>
<tr>
<td>Hypercholesterolemia</td>
<td>0.11</td>
<td>0.57</td>
</tr>
</tbody>
</table>
SOS Study
Conclusions

• More weight loss maintained in surgery group (-16.1% vs. +1.6% at 10 yrs)
• Treatment of cardiovascular risk factors (2 and 10 yrs)
  – DM
  – Hypertriglyceridemia
  – HTN
  – Low HDL
SOS Study
Conclusions

- **Prevention** of cardiovascular risk factors
  - Lower incidence of DM and hypertriglyceridemia
  - No difference in incidence of HTN between the surgical and non-surgical group at 10 years
  - No difference in incidence of low HDL between the surgical and non-surgical group at 10 years
Bariatric Surgery

- Screening patients
- Insurance coverage
- Goal of bariatric surgery
- Types of procedures
- Health outcomes
- Post-operative complications and care issues
# Post-Bariatric Surgery Complications and Care

(Presutti, Sept 2004)

<table>
<thead>
<tr>
<th></th>
<th>Any surgery</th>
<th>LASGB</th>
<th>RNYGB</th>
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<tbody>
<tr>
<td><strong>Early complications</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bleeding</td>
<td></td>
<td>Band infection</td>
<td>Anastomotic leak</td>
</tr>
<tr>
<td>Bowel perforation</td>
<td></td>
<td>Band malfunction</td>
<td></td>
</tr>
<tr>
<td>Death</td>
<td></td>
<td>Band slippage</td>
<td></td>
</tr>
<tr>
<td>Deep venous thrombosis/pulmonary embolism</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dehydration</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dysphagia</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peritonitis</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pneumonia</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pulmonary embolism</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SBO</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wound infection</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Late complications</strong></td>
<td></td>
<td>Anorexia</td>
<td>Internal hernia (SBO)</td>
</tr>
<tr>
<td>Cholecystitis</td>
<td></td>
<td>Band erosion</td>
<td>Marginal ulcers</td>
</tr>
<tr>
<td>Cholelithiasis</td>
<td></td>
<td>Band infection</td>
<td>Pancreatitis</td>
</tr>
<tr>
<td>Dilated pouch</td>
<td></td>
<td>Band malfunction</td>
<td>Stricture</td>
</tr>
<tr>
<td>Dysphagia</td>
<td></td>
<td>Band slippage</td>
<td></td>
</tr>
<tr>
<td>GERD</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incisional hernia</td>
<td></td>
<td>Reservoir leakage</td>
<td></td>
</tr>
<tr>
<td>Malnutrition</td>
<td></td>
<td>(adjustable gastric band only)</td>
<td></td>
</tr>
<tr>
<td>Vitamin B&lt;sub&gt;12&lt;/sub&gt; deficiency</td>
<td></td>
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</tbody>
</table>

*Data from references 2, 3, 7, 8, 13, 18, and 32-36. GERD = gastroesophageal reflux disease; LASGB = laparoscopic adjustable silicone gastric banding; RNYGB = Roux-en-Y gastric bypass; SBO = small bowel obstruction.*
Post-Bariatric Surgery Complications and Care

• Dumping syndrome
  – Sxs: postprandial sweating, weakness, hypoglycemia, malaise
  – Only occurs in bypass procedures
  – Rarely severe
  – Usually resolves as patients adapt to new anatomy and selectively avoid foods high in concentrated sugar or fat
Post-Bariatric Surgery Complications and Care

• Dietary Deficiencies
  – Common in patients with bypass procedure
  – Iron, B12, Calcium absorption is impaired
  – Folate deficiency → hyperhomocystinemia

• Treatment
  – Daily vitamin and mineral replacement
Post-Bariatric Surgery Complications and Care

• GERD
  – Occurs in vertical-banding gastroplasty

• Treatment
  – PPI
  – Gastric bypass
Post-Bariatric Surgery Complications and Care

• Osteoporosis
  – Bone resorption during weight loss of unclear mechanism
  – Impaired absorption of calcium and vitamin D

• Treatment
  – Calcium and Vitamin D supplement

• Follow-up
  – DEXA scan when new weight achieved
Post-Bariatric Surgery
Complications and Care

• Gallstones
  – Common with any rapid weight loss
  – May occur in up to 27% of patients within 3 years after bypass surgery

• Treatment
  – Surgical: prophylactic chole at time of bariatric surgery
  – Medical: 600mg Ursodiol for 6 months post-op
Post-Bariatric Surgery
Complications and Care

• Excess skin
  – Usually considered by most insurance companies as a cosmetic procedure; therefore, coverage is denied
  – May be covered if complicated by stasis dermatitis, ulceration
  – Plastic surgeons will generally not perform the procedure until weight loss has been maintained for at least 1 year
Post-Bariatric Surgery
Complications and Care

• Pregnancy
  – Studies have demonstrated minimal adverse events in pregnancy after bariatric surgery
  – Fe deficiency anemia (n=2) and low fat milk production (n=1) was noted in 111 women post-bariatric surgery

• Management
  – Delay pregnancy for 1-2 years post-op (why?)
  – Provide with vitamin and mineral supplements especially during pregnancy
Post-Bariatric Surgery Complications and Care

- Routine care
  - Q3 months x 1 year, then yearly
    - CBC
    - Ferritin, Fe, TIBC
  - Periodically
    - B12
  - At discretion of clinician
    - DEXA scan
Other issues

• Weight loss maintenance
• Caring for the unsuccessful patient
Weight loss maintenance

• The successful patient:
  What to do on every follow-up visit
  – Give support
  – Emphasize that patient is making a lifestyle change, as opposed to being on a diet
**Weight loss maintenance**

- Approach to relapses:
  - They happen
  - Get patient to diagnose trigger that led to relapse and problem solve
  - Don’t let patient “beat up on self”
  - Encourage patient to “get back on the horse” as soon as possible
Helpful resource re triggers and problem solving

- “Thin for Life” by Dr. Stephen Gullo
  - Raises consciousness about triggers
  - Helpful behavior modification strategies
Success stories:
National Weight Control Registry

4000 people who maintained 30 lb. weight loss for > 1 year:
- changed eating, exercise habits
- dealt with cravings better
- more committed to change
- www.nwcr.ws
Caring for the unsuccessful patient

• Maintain empathy, respect, support
• Review BMI sheet at each visit
• Motivational interviewing
  – Assess motivation
  – Get patient to recognize discrepancy between goals and results
  – Emphasize belief that patient can succeed
Caring for the unsuccessful patient

• Intermediate goal: prevention of weight gain
Weight Management in the Office

Take Home Messages
Take Home Messages

• All adult patients should be screened for obesity (USPSTF)
• Counsel individuals on weight loss if BMI > 30 or BMI > 25 and ≥2 co-morbid conditions (NHLBI)
  – Make the diagnosis and talk about it
  – Assess patient readiness
  – Motivate patients to pursue weight loss
Take Home Messages

• Help patients set realistic goals
  – Initially, 10% weight loss over 6 months (NHLBI)
  – Weight maintenance

• Therapy should always include a low calorie diet and physical activity. It may also include pharmacotherapy and rarely surgical therapy (NHLBI)
# Guide to Selecting Treatment

<table>
<thead>
<tr>
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<th>BMI</th>
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<tbody>
<tr>
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<tr>
<td>Diet, physical activity, behavior therapy</td>
<td>With co-morbidities</td>
</tr>
<tr>
<td>Pharmacotherapy</td>
<td></td>
</tr>
<tr>
<td>Surgery</td>
<td></td>
</tr>
</tbody>
</table>

Take Home Messages

• Active maintenance therapy should be continued indefinitely (NHLBI)
  – Keep diagnosis on patient’s active problem list
  – Remain engaged in their struggles and successes
Resources

• http://www.nhlbi.nih.gov/about/oei/index.htm for portion distortion quiz, BMI calculator, patient information
• https://emall.nhlbihin.net/find2.asp to order educational and patient resources (e.g. cookbooks, etc)