

OSC 12
Ohio Safety Congress & Expo

WELL AT HOME. SAFE AT WORK.

221 Meeting the Challenge: Assessment and Care of the Bariatric Patient

Kathy Foreman

Thursday, March 29, 8:15 to 9:15 a.m.

Ohio Bureau of Workers' Compensation

Continuing Nursing Education Disclosures

- o **Goal:** To educate conference attendees on specific aspects of accident prevention and Ohio's workers' compensation system
- o **Learning objectives for session # 221 Meeting the Challenge: Assessment and Care of the Bariatric Patient:**
 - Define obesity according to the guidelines of the American Heart Association, National Institutes of Health and World Organization
 - Identify health risks associated with obesity
 - Explain how to overcome the challenges associated with assessing and treating obesity
- o **Criteria for Successful Completion:** Attend the entire event and complete a session evaluation.
- o **Conflict of Interest:** The planners and faculty have **no** conflict of interest.
- o **Commercial Support:** There is no commercial support for this event.
- o **Continuing Education:** Awarded 0.1 IACET general CEUs and 1.0 RN* contact hour.

*The Ohio BWC (OH-18801-01-2013) is an approved provider of continuing nursing education by the Ohio Nurses Association (ONA-001-91), an accredited approver by the American Nurses Credentialing Center's Commission on Accreditation.

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Meeting the Challenge: Assessment and Care of the Bariatric Patient

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March 29, 2012

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Definition of Obesity

The National Institute of Health (NIH) has utilized Body Mass Index (BMI) for defining overweight and obesity.

- Measures weight in relation to height
- kg/m²
- BMI = $\frac{\text{WEIGHT (pounds)}}{\text{HEIGHT (inches)}^2} \times 703$

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1998 NIH Clinical Guidelines on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults

BMIs AND ASSOCIATED RISK LEVELS		
	BMI	RISK FOR COMORBIDITIES
Normal	18.5-24.9	Average
Overweight:		
Pre-obese	25.0-29.9	Increased
Obesity class I	30.0-34.9	Moderate
Obesity class II	35.0-39.9	Severe
Obesity class III	≥ 40	Very severe

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NHLBI Guidelines: Classification of Overweight and Obesity by BMI, Waist Circumference and Associated Disease Risk*

Disease Risk* Relative to Normal Weight and Waist Circumference

	BMI kg/m ²	Obesity Class	Men ≤102cm (≤40in) Women ≤88cm (≤35in)	Men >102cm (>40in) Women >88cm (>35in)
Underweight	<18.5			
Normal**	18.5-24.9			
Overweight	25.0-29.0		Increased	High
Obesity	30.0-34.0	I	High	Very High
	35.0-39.9	II	Very High	Very High
Extreme Obesity	≥40	III	Extremely High	Extremely High

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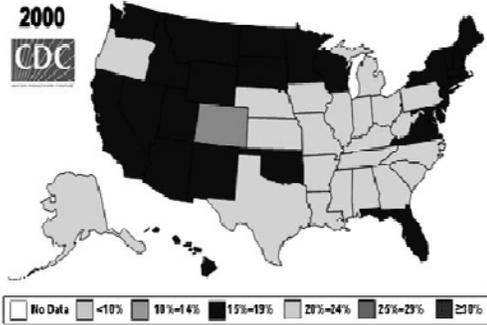
*Disease risk for Type 2 DM, HTN, and CVD
**Increased waist circumference can also be a marker for increased risk even if normal weight

Prevalence of Obesity

- More than one-third of U.S. adults (35.7%) are obese.
- No state has met the nation's *Healthy People 2010* goal to lower obesity prevalence to 15%. The number of states with an obesity prevalence of 30% or more has increased to 12 states in 2010. In 2009, nine states had obesity rates of 30% or more. In 2000, no state had an obesity prevalence of 30% or more.
- Obesity-related conditions include heart disease, stroke, type 2 diabetes and certain types of cancer, some of the leading causes of death.

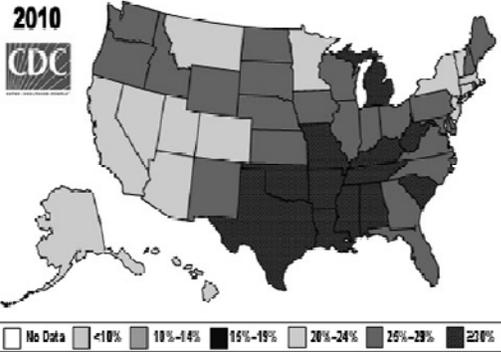
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Percent of Obese (BMI ≥ 30) in U.S. Adults



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Percent of Obese (BMI ≥ 30) in U.S. Adults



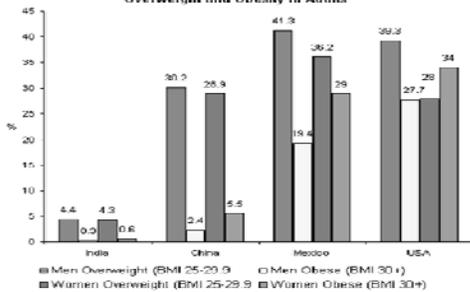
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Obesity and socioeconomic status.

- Among non-Hispanic black and Mexican-American men, those with higher incomes are more likely to be obese than those with low income.
- Higher income women are less likely to be obese than low-income women.
- There is no significant relationship between obesity and education among men. Among women, however, there is a trend—those with college degrees are less likely to be obese compared with less educated women.
- Between 1988–1994 and 2007–2008 the prevalence of obesity increased in adults at all income and education levels

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Overweight and Obesity in Adults



We are the fattest country!

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Economic Consequences of Obesity

- In 2003, Americans spent about \$75 billion in weight-related medical bills.
- In 2002, medical costs attributed to overweight and obesity reached an incredible \$92.6 billion.
- Many insurance companies do not cover clinical or non-clinical weight-loss programs.
- Treating an obese individual cost \$1,244 more in 2002 than treating a healthy-weight person did.



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Economic Consequences of Obesity

- Total cost: \$117 billion in 2000
 - Direct cost: \$61 billion
 - Indirect cost: \$56 billion (comparable to cigarettes)
- The cost of lost productivity related to obesity (BMI ≥ 30) among Americans ages 17-64 is \$3.9 billion (1994):
 - Workdays lost related to obesity: \$39.3 million
 - Physician office visits related to obesity: \$62.7 million
 - Restricted activity days related to obesity: \$239 million
 - Bed days related to obesity: \$89.5 million
- Duke University study of its own employees found a significant link between obesity and the cost of workers compensation. The analysis found that obese workers filed twice the number of workers' compensation claims, had seven times higher medical costs from those claims and lost 13 times more days of work from work injury or work illness than non-obese workers.

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Etiology of Obesity

- Results from an energy imbalance between calories consumed vs. calories expended
- When energy intake chronically exceeds energy expenditure it results in expansion of adipose tissue lipid storage and favors adipogenesis or an increase in the number of fat cells.
- Etiology is complex and numerous biological and behavioral factors can affect the energy balance equation.
- Obvious from epidemic level of obesity that environmental and lifestyle factors play a strong role.

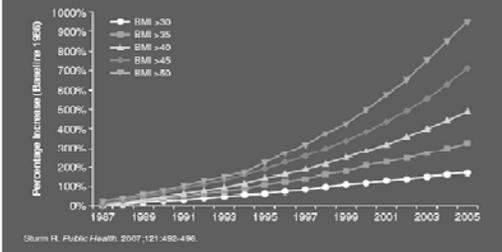
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Health Risks

- Studies show an increase in mortality associated with overweight and obesity.
- Obese individuals (BMI ≥ 30) have a 50-100% increased risk of premature death from all causes compared to individuals with a BMI of 20 to 25.
- Estimated 300,000 deaths a year may be attributable to obesity.
- Morbidity may be as great as from poverty, smoking or problem drinking.
- Predicted that obesity over the next 20 years will be the **number one health problem** throughout the world.

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Increasing Prevalence of Extreme Obesity



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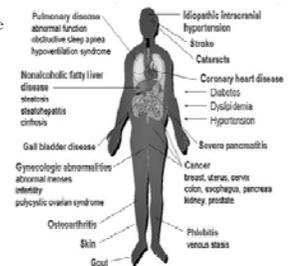
Obesity-related organ systems review

- **Cardiovascular**
 - Hypertension
 - Congestive heart failure
 - Cor pulmonale
 - varicose veins
 - Pulmonary embolism
 - Coronary artery disease
- **Endocrine**
 - Metabolic syndrome
 - Type 2 diabetes
 - Dyslipidemia
 - PCOS, androgenicity
 - Amenorrhea, infertility, menstrual disorders
- **Musculoskeletal**
 - Gout
 - Osteoarthritis (knees and hips)
 - Low back pain
- **Psychologic**
 - Depression
 - Body image disturbance
- **Integument**
 - Stretch marks
 - Stasis pigmentation of legs
 - Lymphedema
 - Cellulitis
 - Intradigo
 - Acanthosis nigricans, skin tags
- **Respiratory**
 - Dyspnea
 - Obstructive sleep apnea
 - Hypoventilation syndrome
 - Pickwickian syndrome
 - asthma
- **Gastrointestinal**
 - GERD
 - Nonalcoholic fatty liver disease
 - Cholelithiasis
 - Hernias
 - Colon cancer

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Obesity-related organ systems review

- **Genitourinary**
 - Urinary stress incontinence
 - Obesity-related glomerulopathy
 - Hypogonadism (male)
 - Breast and uterine cancer
 - Pregnancy complications
- **Neurologic**
 - Stroke
 - Idiopathic intracranial hypertension
 - Pseudo tumor cerebri



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Relative Risks When BMI > 40

Co-morbidities	Men	Women
Type 2 DM	10.65	19.89
CAD	13.97	19.22
HTN	64.53	63.16
OSA	10.04	17.19

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Relative Risks When BMI > 40

Co-morbidities	Men	Women
Breast Ca		1.70
Colon Ca	1.84	1.36
Kidney Ca	1.70	1.70
Liver Ca	4.52	1.68

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Obesity Co-morbidities

- ❑ **Hypertension**
HTN with dyslipidemia and cigarette smoking are the 3 primary risk factors for CVD.
- ❑ **Dyslipidemia**
Framingham Study determined that for every 10% increase in weight, plasma cholesterol levels increased about 12 mg/dl. Characterized by hypercholesterolemia, elevated LDL, reduced HDL, and hypertriglyceridemia.
- ❑ **Diabetes and Impaired Glucose Tolerance**
Nurse's Health Study showed that relative risks of DM increased ≈ fortyfold as BMI increased from 25 to above 35.

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Obesity Comorbidities

- ❑ **Diabetes and Impaired Glucose Tolerance**
Enlarged visceral fat stores produce a rapid release of FFA and glucose, leading to a block in insulin binding by the liver, gluconeogenesis, and functional insulin resistance. Obese individuals have an increased prevalence of impaired glucose control, elevated fasting insulin levels, elevated fasting glucose levels, suppressed metabolic glucose clearance rates, and insensitivity to insulin concentrations.
- ❑ **Asthma**
Obese children are 3 times as likely to experience asthma, with an incidence of about 30% and adults are twice as likely with an incidence of about 25%.

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Obesity Co-morbidities

- ❑ **Sleep Apnea**
Early sleep apnea with heavy snoring may progress to severe apnea requiring CPAP. Abdominal girth is the most significant risk factor. More prevalent in men than in obese women.
- ❑ **Osteoarthritis**
Weight-bearing OA of the hips, knees, ankles, and feet is accelerated in the obese. May inhibit ambulation and the ability to exercise and burn calories.

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Obesity Comorbidities

- ❑ **Cholelithiasis**
Obese are 3 times more likely to have than the nonobese. Five F's: fat, fair, female, fertile, and forty
- ❑ **GERD**
Frequency of occurrence in the obese may be 50% compared to 20% in the general population with half of these patients requiring medication. increased intra-abdominal pressure is a major causative factor.

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Obesity Comorbidities

- ❑ **Pseudotumor Cerebri and Carpal Tunnel Syndrome**
Intraabdominal pressure can cause an increase in cerebrospinal fluid leading to intracranial hypertension known as pseudotumor cerebri.
Causes severe headaches, pulsatile tinnitus, and visual disturbances.
The obese have 4 times the incidence of median nerve neuritis or carpal tunnel syndrome.
Stronger risk factor than repetitive occupational tasks involving the finger tendons' passing through the carpal tunnel.

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Obesity Comorbidities

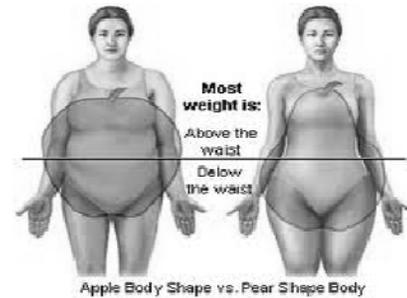
- ❑ **Stress Incontinence**
Increased intra-abdominal pressure creates pelvic floor stress and neuromuscular impairment of the urinary tract.
- ❑ **Female Endocrine and Reproductive Disorders**
Estrogen is secreted by fat cells and the obese have increased levels of circulating estrogens.
Can induce erratic menstruation, amenorrhea, dysfunctional uterine bleeding, early menopause, and infertility.
Polycystic Ovary Syndrome (PCOS) is 3 times more prevalent in the obese female.

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Obesity Comorbidities

- ❑ **Depression**
Prevalence is high particularly in obese women.
- ❑ **Metabolic Syndrome**
More and more common in the United States. Researchers not sure whether the syndrome is due to one single cause, but all of the risks are related to obesity, most important risk factors are: Extra weight around the middle and upper parts of the body (central obesity). "apple-shaped."
Insulin resistance, the body cannot use insulin effectively. Insulin needed to control the amount of sugar in the body. Blood sugar and fat levels rise.

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Obesity and Life Expectancy

- Life expectancy of a moderately obese person could be shortened by 2 to 5 years.
- White men between 20 and 30 years old with a BMI ≥ 45 could shorten their life expectancy by 13 years.
- White women in the same category could lose up to 8 years of life.
- Young African American men with a BMI ≥ 45 could lose up to 20 years of life.
- African American women, up to 5 years of life

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Guidelines and Recommendations Regarding Obesity Care

- Clinicians should screen all adult patients for obesity and offer intensive counseling and behavioral interventions to promote sustained weight loss for obese adults.
- 2009 HEDIS measure includes documentation of body mass index (BMI) in the medical record along with counseling for nutrition and physical activity.

U.S. Preventive Services Task Force. Screening for obesity in adults: Recommendations and rationale. *Ann Intern Med.* 2003; 139: 930-932
National Committee for Quality Assurance. 2009 Healthcare Effectiveness Data and Information Set (HEDIS)

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The Office Visit: The Evaluation Process

1. Take a comprehensive history, physical exam & obtain lab tests for medical condition
2. Measure weight, height, waist circumference and record body mass index (BMI)
3. Categorize obesity classification and risk
4. Assess need for treatment
5. Broach the subject
6. Assess readiness for treatment

31 The Practical Guide 2000.

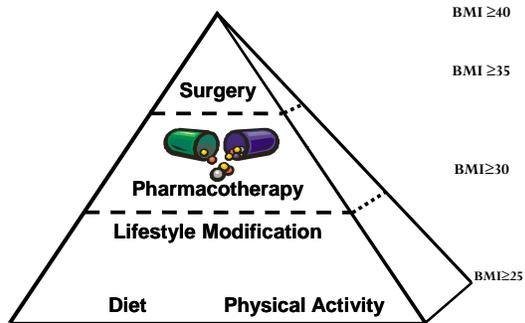
What Treatments are Effective?

A variety of effective options exist for the management of overweight and obese patients including:

- Dietary therapy approaches such as low-calorie diets and lower-fat diets
- Altering physical activity patterns
- Behavior therapy techniques
- Pharmacotherapy
- Surgery

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Obesity Treatment Pyramid



A Guide to Selecting Treatment

Treatment	BMI Category				
	25-26.9	27-29.0	30-34.9	35-39.9	≥40
Diet, physical activity, and behavior therapy	With co-morbidity	+	+	+	+
Pharmacotherapy		With co-morbidity	+	+	+
Surgery				With co-morbidity	+

34 The Practical Guide 2000

Commitment??

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"I'm going to order a broiled skinless chicken breast, but I want you to bring me lasagna and garlic bread by mistake."

Strategies for Weight Loss

- Dietary Therapy
 - Individually planned diet
 - Deficit of 500 to 1,000 kcal/day should be an integral part
 - BMIs in the range of 27 to 35 need a decrease of 300-500 kcal/day to lose ½ to 1 lb/week and a 10% loss in 6 months
 - BMIs > 35 require deficits of up to 500 to 1,000 kcal/day to lose 1 to 2 lbs/week and a 10% weight loss in 6 months
 - Experience reveals that lost weight usually will be regained unless a weight maintenance program consisting of dietary therapy, physical activity, and behavior therapy is continued indefinitely.

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Strategies for Weight Loss

- Physical Activity
 - Important component of weight loss therapy, although will not lead to substantially greater weight loss over 6 months
 - Most weight loss occurs because of decreased caloric intake
 - Sustained physical activity is most helpful in the prevention of weight regain
 - Benefit in reducing cardiovascular and diabetes risks beyond that produced by weight reduction alone.
 - Reducing sedentary time another strategy

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Strategies for Weight Loss

- Behavior Therapy
 - Strategies based on learning principles
 - Specific strategies include:
 - Self-monitoring of both eating habits and physical activity (logs)
 - Stress management
 - Stimulus control
 - Problem solving
 - Contingency management
 - Cognitive restructuring
 - Social Support (support groups, friends, family)

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Strategies for Weight Loss

- Pharmacotherapy
 - FDA approved weight loss drugs can be useful adjuncts to dietary therapy and physical activity for patients with a BMI ≥ 30 with no risk factors and for BMI ≥ 27 with risk factors.
 - Risk factors warranting pharmacotherapy at a BMI of 27 are:
 - HTN
 - Dyslipidemia
 - CHD
 - Type 2 DM
 - Sleep apnea

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Pharmacologic Interventions

- 2nd tier of a weight loss program
- Should be used after at least 6 months of diet and exercise
- Orlistat (Xenical, Alli)
 - Lipase inhibitor
 - Diarrhea with high fat foods
 - Dosages range from 60 mg to 120 mg
- Phentermine (Adipex)
 - Anorexiant and sympathomimetic
 - Effective short-term diet pill
 - Schedule IV drug

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Strategies for Weight Loss

- Weight Loss Surgery
 - BMIs ≥ 40 or ≥ 35 with co-morbid conditions
 - Reserved for patients in whom efforts at medical therapy have failed and who are suffering from the complications of obesity
 - Roux-en-Y gastric bypass, Adjustable Gastric Banding or Sleeve Gastrectomy are weight loss options for motivated subjects with acceptable operative risks
 - Program must be in place to provide guidance on diet, physical activity, and behavioral and social support both prior to and after surgery

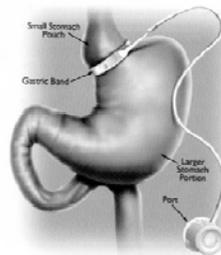
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Bariatric Surgery Procedures

- Roux-en-Y Gastric Bypass (RYGB)
 - Primarily restrictive but also has a malabsorptive element
 - Open or laparoscopically (> 90%)
 - High success rate
- Laparoscopic Gastric Banding (LAGB)
 - Restrictive procedure
 - Relatively simple
 - Can be adjusted or removed
- Sleeve Gastrectomy
 - Restrictive
 - Patients with a BMI < 50
 - Excess weight loss 33% after 2 years

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Adjustable Gastric Banding



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LAPBAND.wmv

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Gastric Banding

- Advantages
 - Less invasive (no transection/anastomoses)
 - Relatively easy to perform procedure
 - Adjustable to weight loss/symptoms
 - Reversible
 - Potential outpatient procedure
 - No dumping

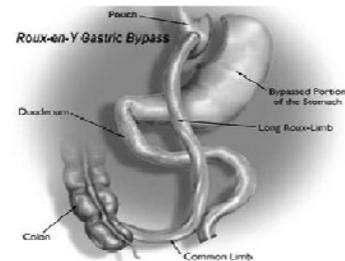
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Lap-Band Results

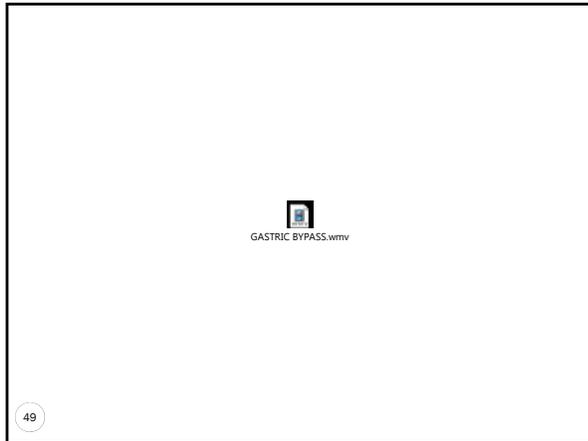
- 40-60% EWL at 3-5 years
- Mean hospital stay is < 2 days
- Mortality rates 0.1%
- Major Complications
 - Band slippage 2.2-10%
 - Port complications 1-11%
 - Band erosions 0.3-1.9%

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The Roux-en-Y Gastric Bypass

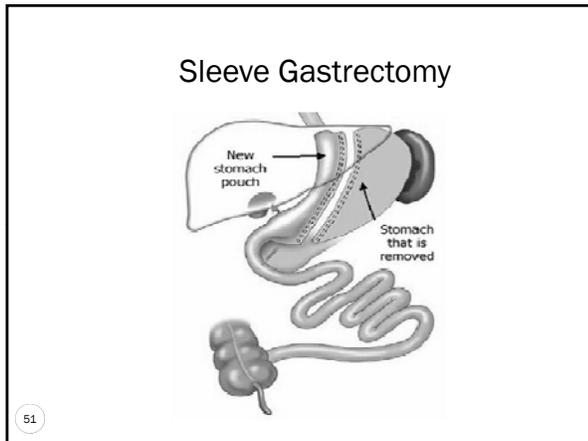


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The Roux-en-Y Gastric Bypass

- Advantages:
 - Excellent excess weight loss 60-80%
 - Very good long term results
 - Solid food well tolerated
- Disadvantages:
 - Potential nutrient deficiencies
 - Dumping syndrome
 - Osteoporosis
 - Diarrhea
 - Anemia



Sleeve Gastrectomy

- Promotes early satiety and limits consumption
- Helps to lower ghrelin levels
- No dumping syndrome
- Low malnutrition risk
- Insufficient evidence demonstrating long-term success rates
- Complications include gastric leak, nausea, stricture development, and reflux

Weight Loss Surgeries

Type of Surgery	Expected Excess Weight Loss	Advantages	Disadvantages
Laparoscopic Gastric Banding (LAGB)	30% to 60%	Easy to perform Adjusted or removed Low complication rate	Weight loss is gradual and does require band adjustments
Sleeve Gastrectomy	33%	Can be performed on very obese patients	Lower expected weight loss
Gastric Bypass	50% to 75%	Good long-term success	Potential complications Requires experienced surgeon

Co morbidities Post-op

COMORBIDITY	% IMPROVED	% RESOLVED
OA/DJD	47	41
Hypercholesterolemia	33	63
GERD	24	72
HTN	18	70
Sleep Apnea	19	74

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Co morbidities Post-op

COMORBIDITY	% IMPROVED	% RESOLVED
Urinary Incontinence	39	44
Depression	47	8
Peripheral Edema	55	41
Asthma	69	33
Type 2 Diabetes	18	82

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“Bariatric Surgery: A Systematic Review and Meta-Analysis”

	% RESOLVED	% RESOLVED OR IMPROVED
Diabetes	76.8	86.0
Hyperlipidemia		70
Hypertension	61.7	78.5
Obstructive Sleep Apnea	85.7	83.6

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References

- Moore, C. Taking back control: the fight against obesity. *The Clinical Advisor*. July 2011
- Kushner, RF and Roth, JL. Assessment of the obese patient. *Endocrinology and Metabolism Clinics of North America* 32 (2003) 915-933.
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