Proactive Obesity and Diabetes Management Through Surgery: The Health and Cost Benefits of Early Surgical Intervention

David S. Tichansky, MD, FACS
Professor of Surgery
Jefferson Bariatric and Metabolic Surgery Program
Thomas Jefferson University

Disclosures

- None pertinent to this talk

Obesity and Overweight are a spectrum of disease…

- Overweight = BMI 25 – 29.9
  - 32% of American adults
- Obesity = BMI 30 and greater
  - 36% of American adults
  - Class 1 = 30-34.9
  - Class 2 = 35 – 39.9
  - Class 3 = 40 or greater

… that requires a spectrum of care.

- No one treatment option is a catch all
- As the severity and risk of the disease increase, so should the aggressiveness of treatment.
- This can not be treated as an addiction

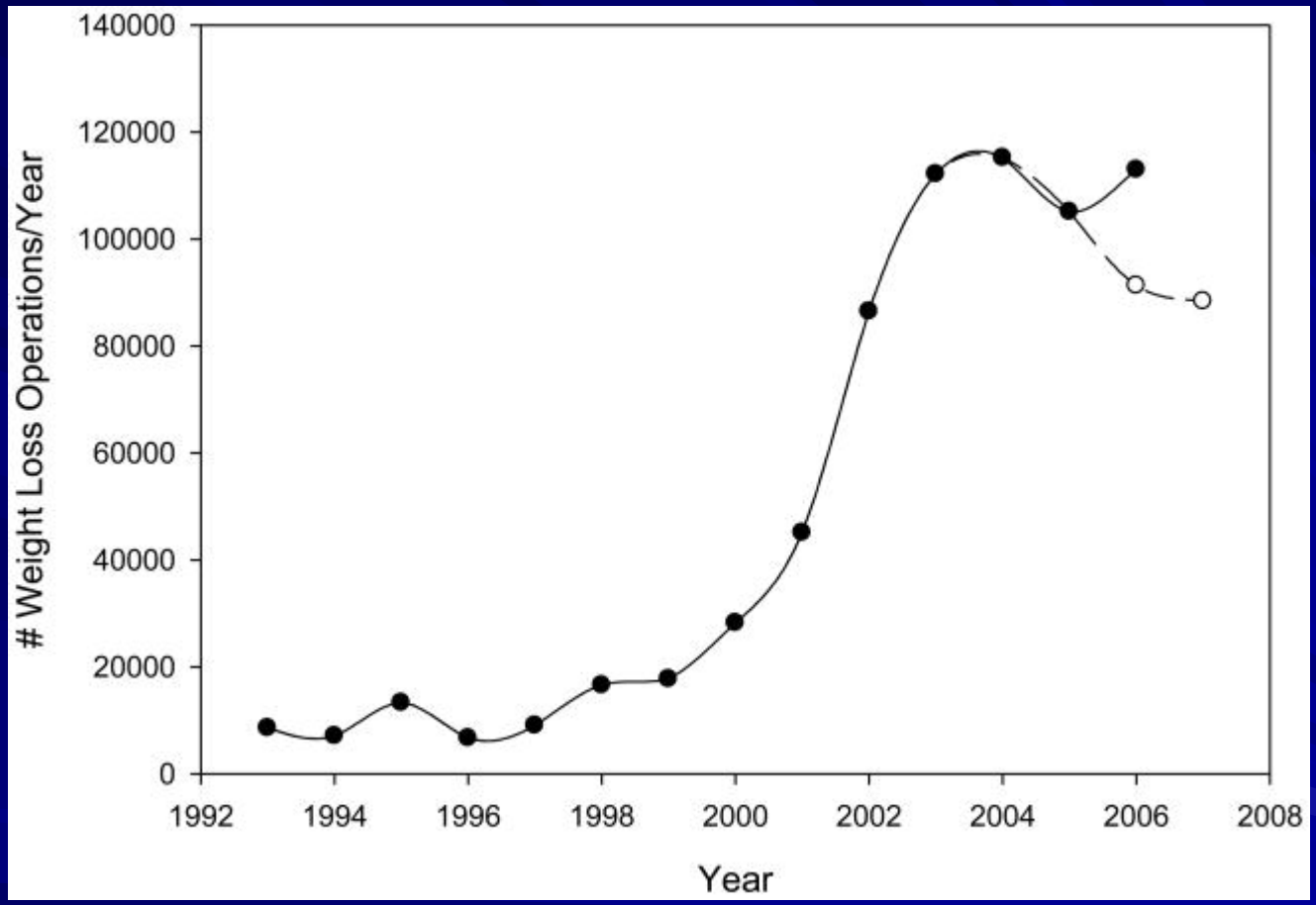
Where do we start?

- Discuss surgical treatment of Obesity
  - Procedures worthwhile
  - Benefits
  - Risks
- Cost of Obesity
- Benefit Options

Diabetes and overweight

- Overweight dramatically increases risk of diabetes
- About 30 percent of overweight people have type 2 diabetes, but 85 % of diabetics are overweight
- 8.3 % of people have diabetes
- 1.9 million new cases per year
- $174 billion per year
- Weight management is essential

Bariatric Surgery in the US



Livingston . Am J Surg 2010. 200:378-385

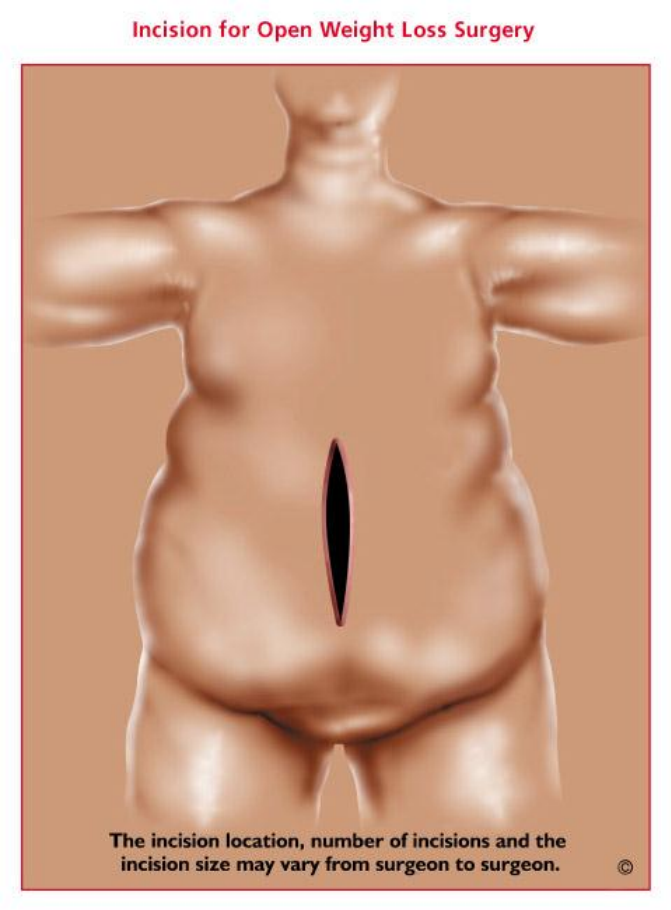
Who is a good candidate for surgery ?

- National Institute of Health – still 1991
  - BMI > 40
  - BMI 35-40 with co morbid conditions
    - High Blood Pressure
    - Heart Disease
    - Sleep apnea
    - Severe DM

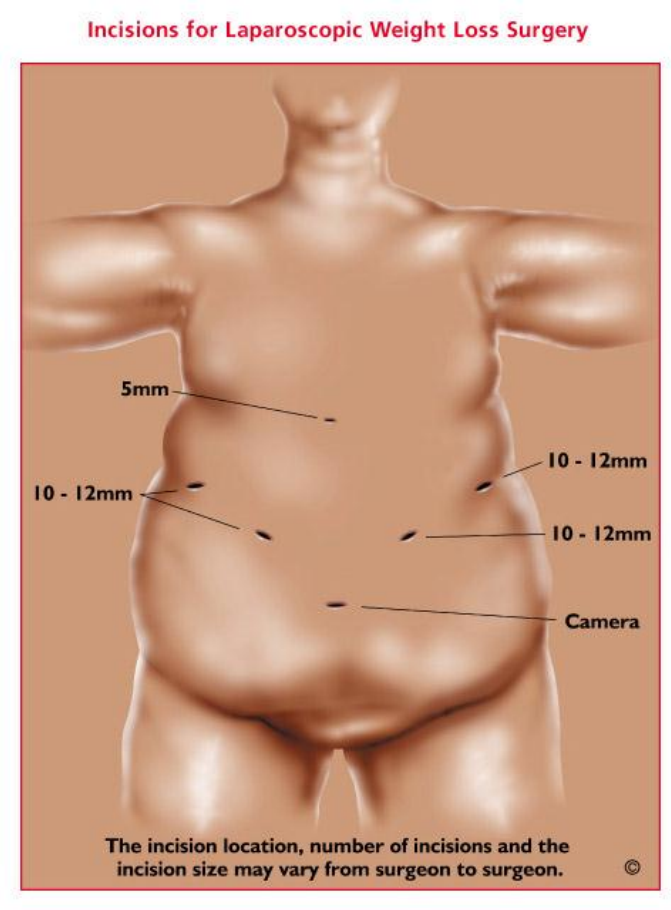
Newer Generation of Bariatric Surgery

- Safer and better outcomes than ever before
  - Laparoscopy

Open Approach



Laparoscopic Approach



Newer Generation of Bariatric Surgery

- Safer than ever before
  - Laparoscopy
  - Procedure Standardization
  - Facilities are nationally regulated

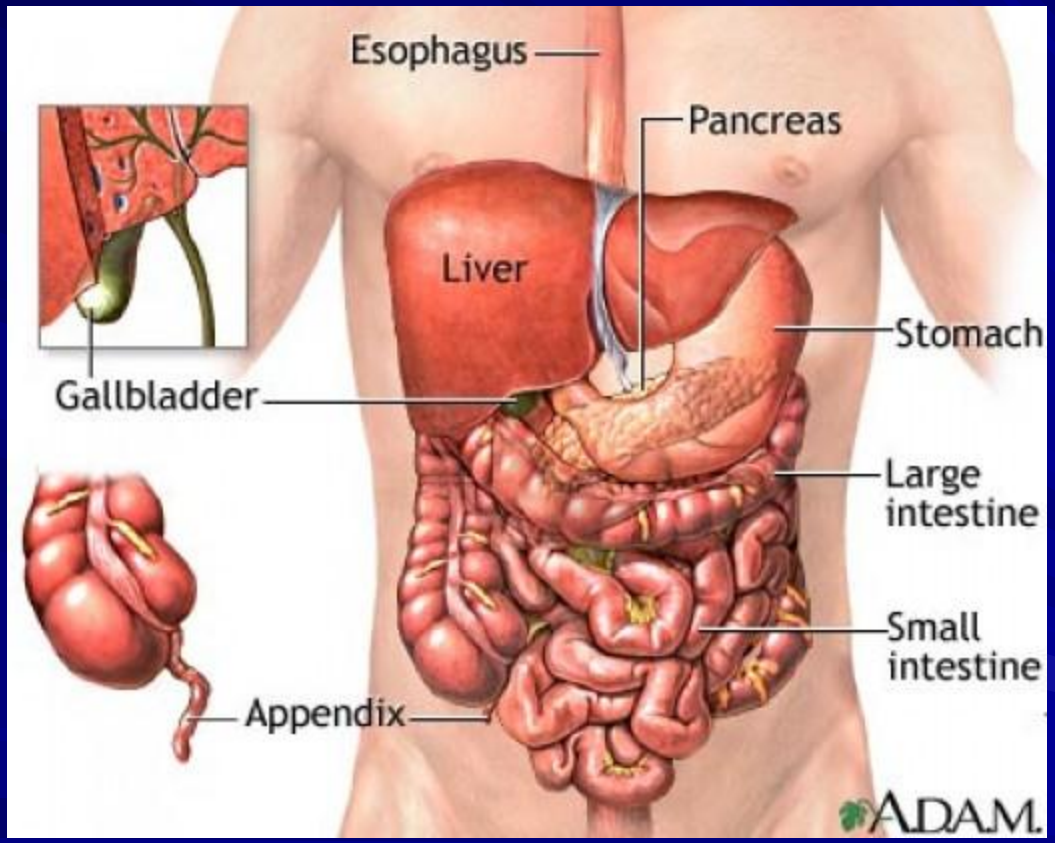
Who is likely not a good candidate for surgery ?

- Age > 65 – Increased Risk of mortality and complications
- Higher BMI increases risk of complications
- Decreased Mobility – Inability to walk 200 feet without assistance
- Psych Issues - Active drug use; Schizophrenia; Undertreated depression; Psychosis or bipolar disorder; Inappropriate expectations of the surgery

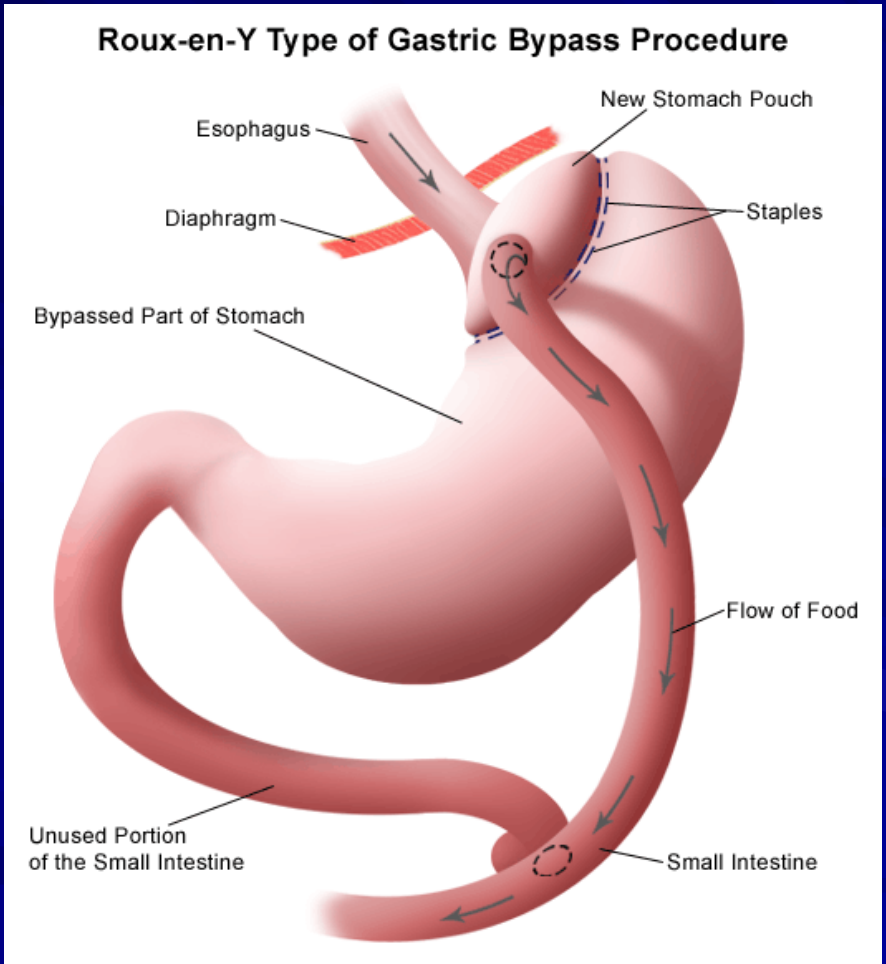
Goals of Surgery

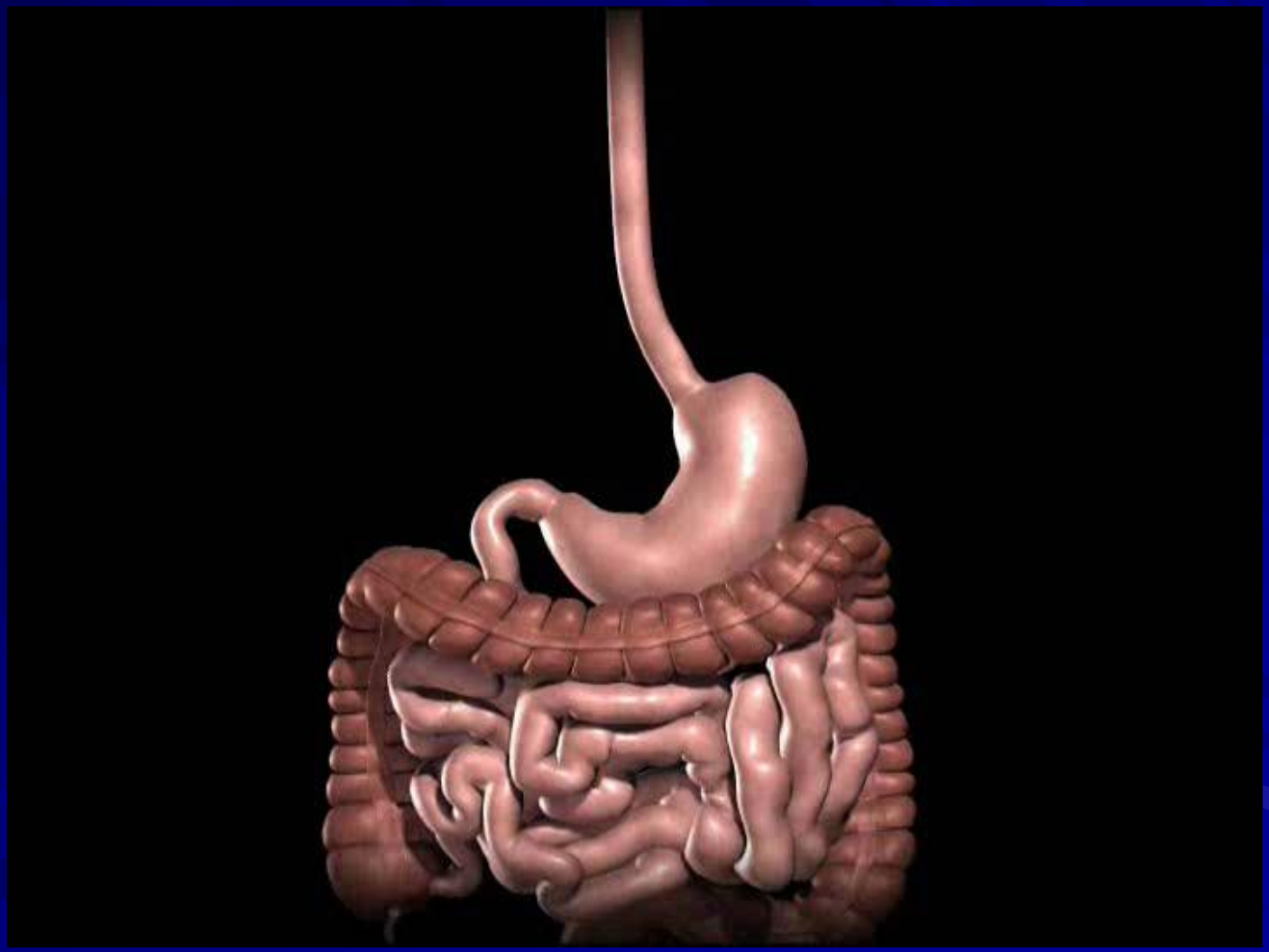
- Restriction of caloric intake
- Control appetite and hunger
- Inducing physiologic satiety from a small volume of food

Anatomy Review

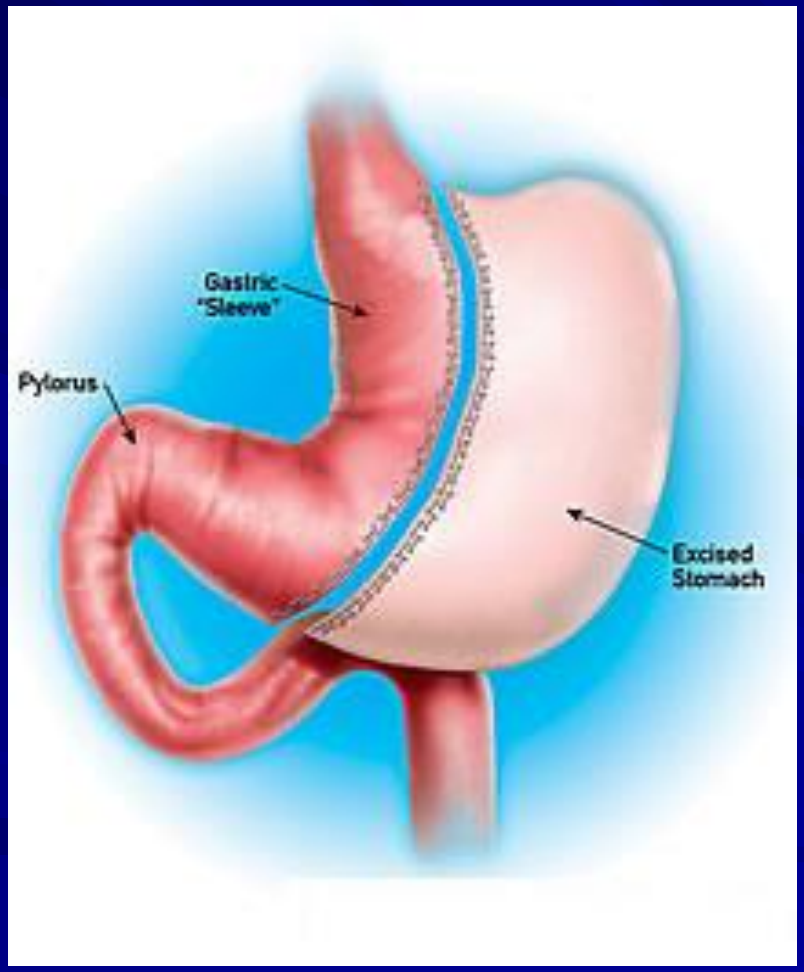


Roux-en-Y Gastric Bypass

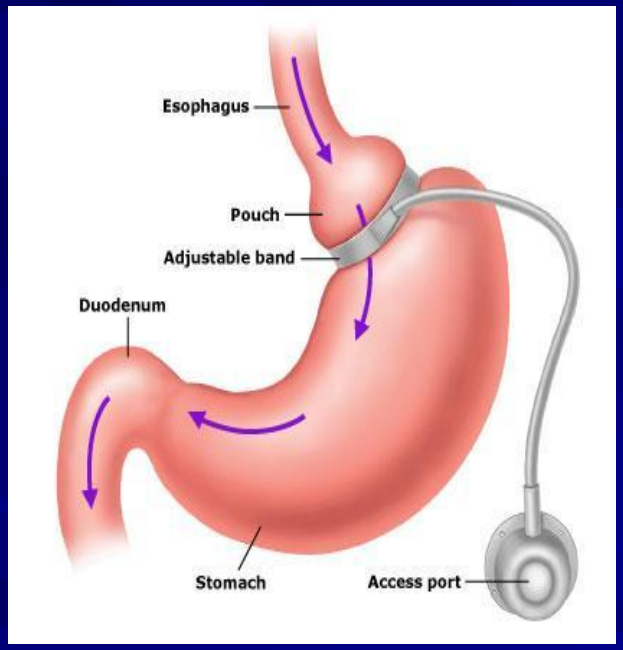




Sleeve Gastrectomy

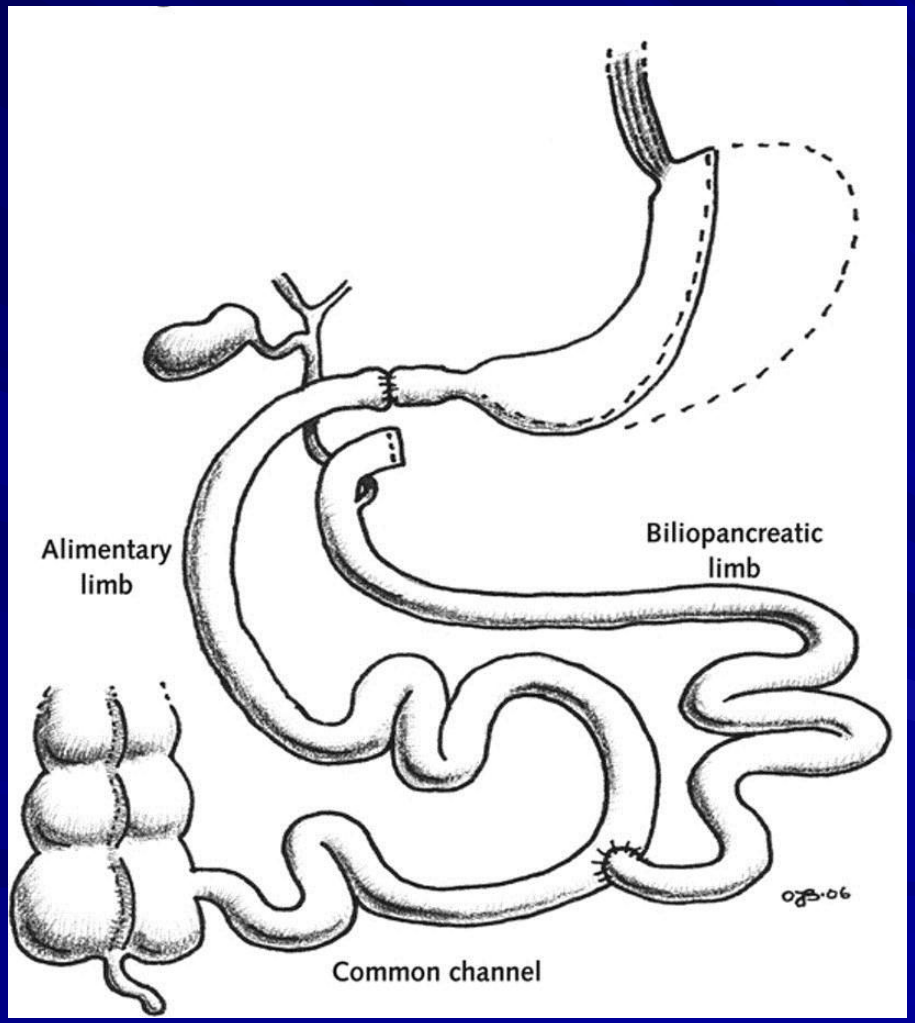


Laparoscopic Adjustable Gastric Banding



- Mid – 2011: European data show long-term risk of weight loss failure and complications much higher than previously thought.
- Possibly as many as ¼ to ½ of pts may require band removal long-term.
- For this reason, popularity of gastric banding is significantly declining in the U.S. and we no longer recommend gastric banding for any patient.

Duodenal Switch



Sleeve vs. Bypass – Benefits

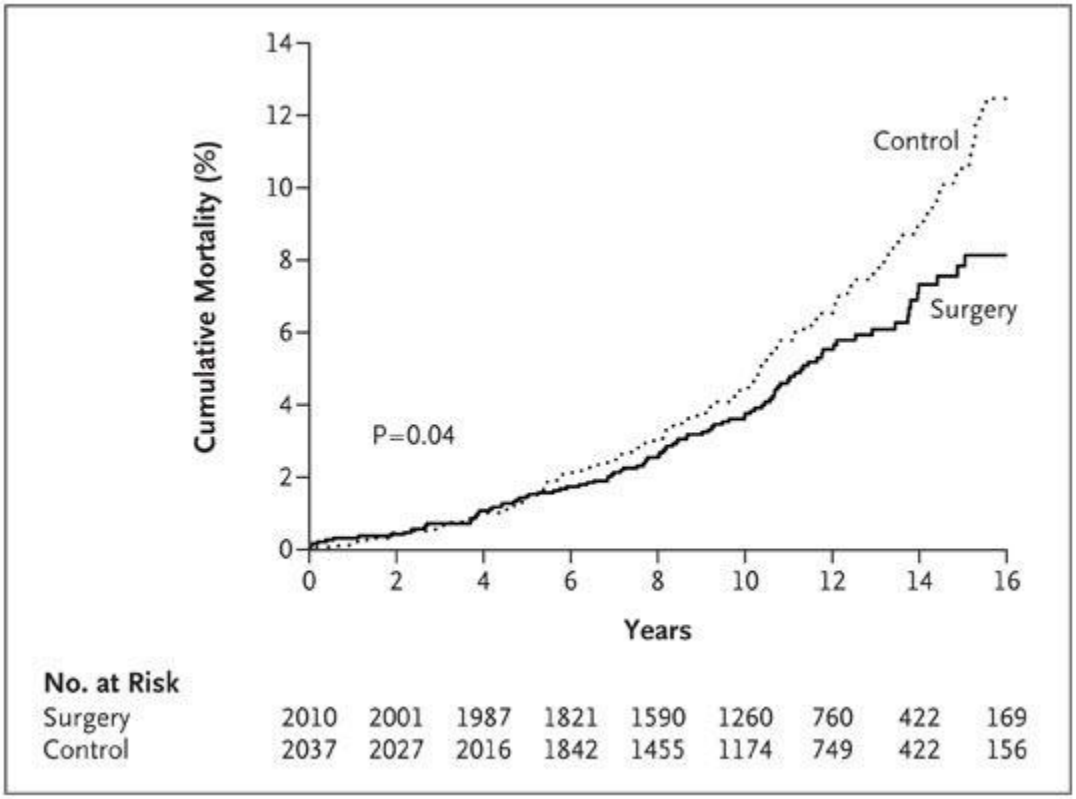
	Sleeve	Bypass
Average weight loss (% of excess weight)	55 – 60%	65 – 70%
Improvement of Diabetes	80%	> 90%
Improvement of Hypertension	65%	75%
Improvement of Sleep Apnea	Almost everyone stops CPAP	

Laparoscopic Sleeve vs. Gastric Bypass – Risks

	Sleeve	Bypass
Staple Line Leak	1%	1%
Pulmonary Embolism	Approximately 1% for both	
Death	0.5%	0.5%
Ulcer	Baseline	4-6 %
Reoperative Rate	4%	4 – 5%

How much risk is doing nothing?

- Multiple studies comparing two groups of patients who qualified for surgery. One had surgery, other didn’t.
    - Surgery group had initial losses
    - Higher percent of surgery group alive years down the road
- 1 year annual risk of mortality is 1/200



N Engl J Med. 2007 Aug 23;357(8):741-52.

Costs of Obesity

- There is a human cost:
  - Quality of life
  - Mobility
  - Longevity

Cost of Obesity

- Annual cost estimated to be $147 billion by CDC
  - 42% increase in medical expenditures c/w healthy wt
- At least $ 45 billion in increased medical expenditures and direct work loss for employers
  - 6 times smoking cost

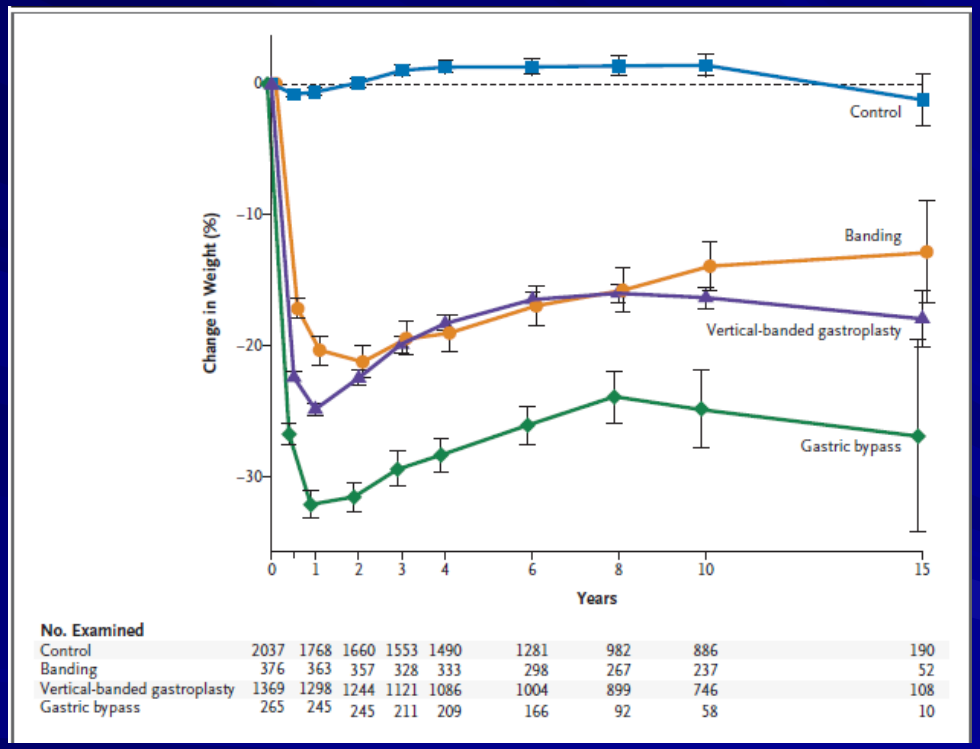
Cost of Obesity

- Total Cost of Obesity to Employers - $73 Billion
  - Increased Medical Expenditures
  - Absenteeism
  - Presenteeism
- Only 37% of obese population are class 2 or 3 but account for 61% of cost
- Comparing overweight to class 3: increase annual cost of $5765 to $5897.

Promoting better weight-related health

- How can employers ensure cost effectiveness?
- Graded investment in what works
- Low investment may not be worthwhile if yield is low

In class 2 and 3, non-surgical weight loss has poor outcomes long-term



No. Examined									
Control	2037	1768	1660	1553	1490	1281	982	886	190
Banding	376	363	357	328	333	298	267	237	52
Vertical-banded gastroplasty	1369	1298	1244	1121	1086	1004	899	746	108
Gastric bypass	265	245	245	211	209	166	92	58	10

N Engl J Med. 2007 Aug 23;357(8):741-52

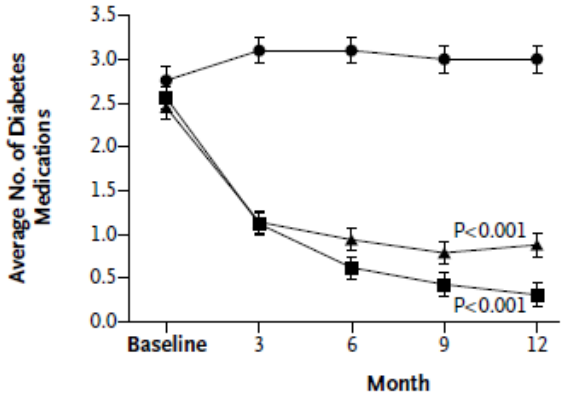
The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 APRIL 26, 2012 VOL. 366 NO. 17

Bariatric Surgery versus Intensive Medical Therapy in Obese Patients with Diabetes

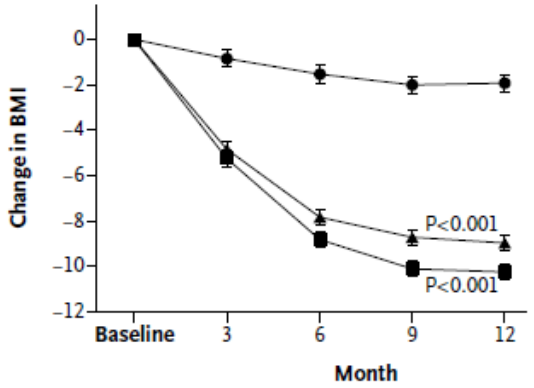
Philip R. Schauer, M.D., Sangeeta R. Kashyap, M.D., Kathy Wolski, M.P.H., Stacy A. Brethauer, M.D., John P. Kirwan, Ph.D., Claire E. Pothier, M.P.H., Susan Thomas, R.N., Beth Abood, R.N., Steven E. Nissen, M.D., and Deepak L. Bhatt, M.D., M.P.H.

C Average No. of Diabetes Medications



Value at Visit					
Intensive medical therapy	2.8	3.1	3.1	3.0	3.0
Roux-en-Y gastric bypass	2.6	1.1	0.6	0.4	0.3
Sleeve gastrectomy	2.4	1.1	0.9	0.8	0.9

D Change in BMI



Value at Visit					
Intensive medical therapy	36.3	35.4	34.8	34.5	34.4
Roux-en-Y gastric bypass	37.0	31.8	28.2	26.9	26.8
Sleeve gastrectomy	36.1	31.3	28.3	27.3	27.2

The NEW ENGLAND JOURNAL of MEDICINE

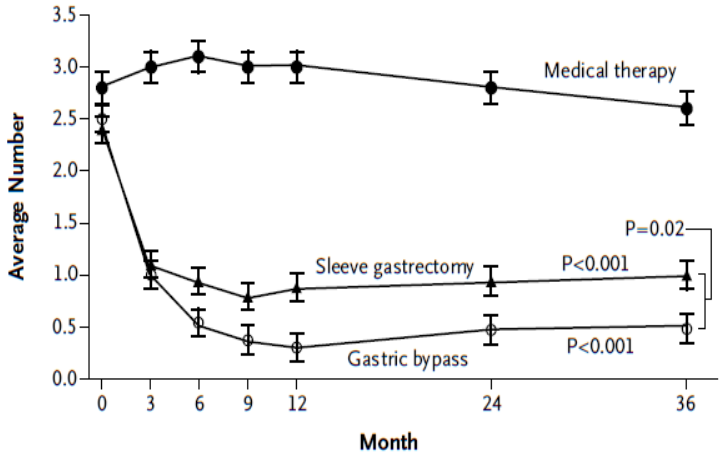
ORIGINAL ARTICLE

Bariatric Surgery versus Intensive Medical Therapy for Diabetes — 3-Year Outcomes

Philip R. Schauer, M.D., Deepak L. Bhatt, M.D., M.P.H., John P. Kirwan, Ph.D., Kathy Wolski, M.P.H., Stacy A. Brethauer, M.D., Sankar D. Navaneethan, M.D., M.P.H., Ali Aminian, M.D., Claire E. Pothier, M.P.H., Esther S.H. Kim, M.D., M.P.H., Steven E. Nissen, M.D., and Sangeeta R. Kashyap, M.D., for the STAMPEDE Investigators*

N Engl J Med 2014;370:2002-13.

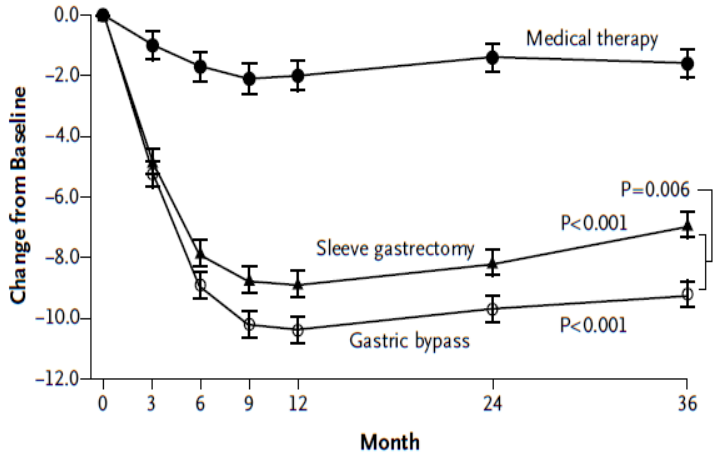
C Diabetes Medications



Value at Visit

Medical therapy	2.8	3.1	3.0	2.8	2.6
Sleeve gastrectomy	2.4	0.94	0.88	0.94	1.0
Gastric bypass	2.5	0.54	0.3	0.47	0.48

D Body-Mass Index



Value at Visit

Medical therapy	36.4	34.6	34.2	35.0	34.8
Sleeve gastrectomy	36.1	28.3	27.1	27.9	29.2
Gastric bypass	37.1	28.2	26.7	27.3	27.9

ORIGINAL INVESTIGATION

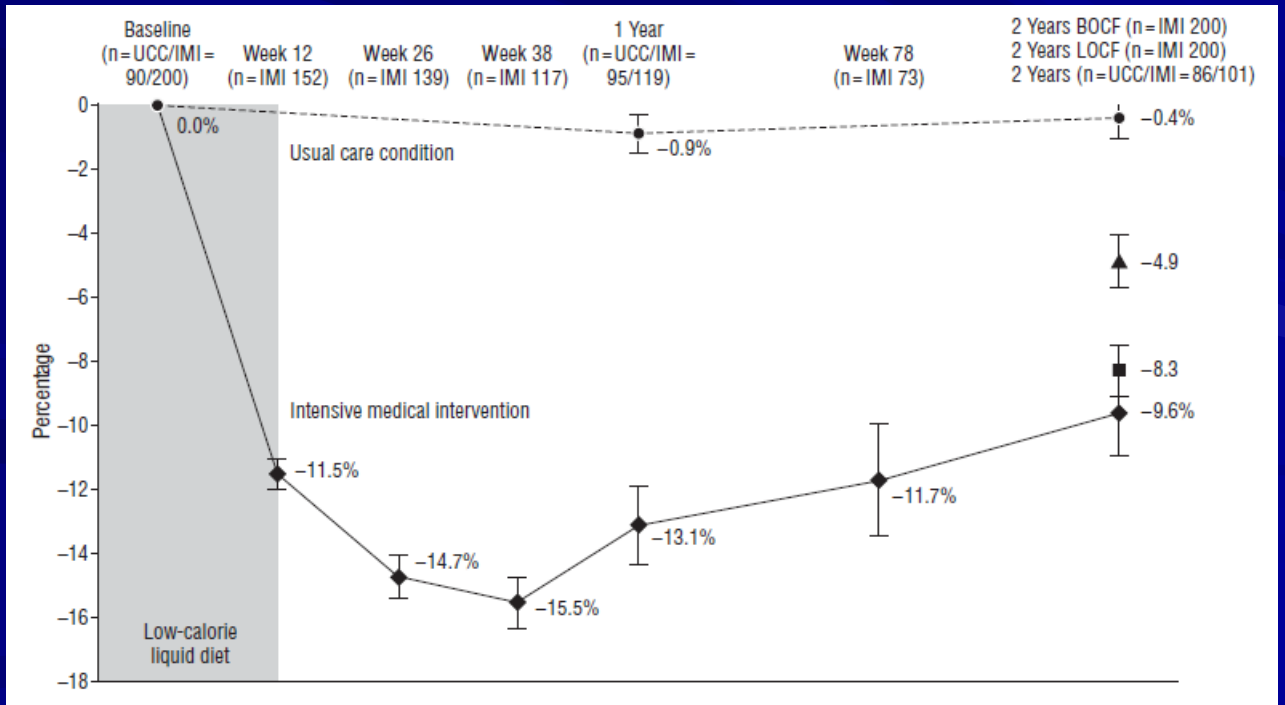
HEALTH CARE REFORM

Nonsurgical Weight Loss for Extreme Obesity in Primary Care Settings

Results of the Louisiana Obese Subjects Study

Donna H. Ryan, MD; William D. Johnson, PhD; Valerie H. Myers, PhD; Tiffany L. Prather, RN; Meghan M. McGlone, MPH; Jennifer Rood, PhD; Phillip J. Brantley, PhD; George A. Bray, MD; Alok K. Gupta, MD; Alan P. Broussard, MD; Bryan G. Baroodes, MD; Brian L. Elkins, MD; David E. Gaudin, MD; Robert L. Savory, MD; Ricky D. Brock, RN; Geralyn Datz, PhD; Srininvasa R. Pothakamuri, MS; G. Tipton McKnight, MD; Kaj Stenlof, MD, PhD; Lars V. Sjöström, MD

Arch Intern Med. 2010;170(2):146-154



Non-surgical Options

- Not uniformly capable to make significant impact as body's physiological, purposeful resistance to weight loss takes over

- Medications can offer modest effect but not have a deep impact
  - Only 2/3 of people lose 5 % of their weight at 1 to 2 years.
  - Intent to treat numbers aren't as favorable.

For Class 3 and Class 2 (with comorbids) there are really only two options:

- Surgery
- Failure of weight loss treatment

Increased Effectiveness, Increased Cost

- Short-term surgical costs generally in $20,000 – $25,000 range

- Multiple studies have examined cost-effectiveness in different settings with different outcomes.

Single payer VA study

Obesity Surgery, 13, 245-248

The Impact of Bariatric Surgery on the Veterans Administration Healthcare System: A Cost Analysis

Scott F. Gallagher, MD; Magdalena Banasiak, MD; John P. Gonzalvo, DO; Daniel P. Paoli, MD; Janice Allwood, ARNP; Debra Morris, PhD; Michel M. Murr, MD, FACS; David H. Shapiro, MD, FACS

Department of Surgery, Bay Pines VAMC and Interdisciplinary Obesity Group, University of South Florida College of Medicine, Tampa, FL, USA

- 25 pts
- Visits reduced from 55 to 18
- Cost of surgery recovered in first year

2013 JAMA study (Blues)

ORIGINAL ARTICLE

Impact of Bariatric Surgery on Health Care Costs of Obese Persons

A 6-Year Follow-up of Surgical and Comparison Cohorts Using Health Plan Data

Jonathan P. Weiner, DrPH; Suzanne M. Goodwin, PhD; Hsien-Yen Chang, PhD, MHS; Shari D. Bolen, MD, MPH; Thomas M. Richards, MSEE; Roger A. Johns, MD, MHS; Soyal R. Momin, MS, MBA; Jeanne M. Clark, MD, MPH

JAMA Surg. 2013;148(6):555-562.

- 29820 pts with 1:1 matched cohort from 1 year annual risk of mortality is 1/200
- Decreased outpt and pharmacy costs offset by increased inpt costs
- Matched group may have been healthier

Maturitas 69 (2011) 230–238

Contents lists available at ScienceDirect

Maturitas

journal homepage: www.elsevier.com/locate/maturitas

Review

Cost-effectiveness of bariatric surgery: Should it be universally available?

Su-Hsin Chang*, Carolyn R.T. Stoll, Graham A. Colditz

Division of Public Health Sciences, Department of Surgery, Washington University School of Medicine, 660 S. Euclid Avenue, Campus Box 8100, St. Louis, MO 63110, USA

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Accepted 15 April 2011

Keywords:
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ABSTRACT

This paper is the first to conduct cost-effectiveness analyses of bariatric surgery comparing obese patients with obesity-related diseases to obese people without comorbidities across different BMI categories, using the meta-analysis results of surgery outcomes for our effectiveness inputs. We find that surgery treatment is in general cost-effective for people whose BMI is greater than 35 kg/m^2 with or without obesity-related comorbidities, and it is even cost-saving for super obese (BMI $\geq$ 50 kg/m^2) with obesity-related comorbidities. Our results also suggest that surgery can be cost-effective for the mildly obese (BMI $\geq$ 30 kg/m^2). The bottom line is that bariatric surgery should be universally available to all classes of obese people.

- Meta-analysis
- Cost effective in BMI > 35 with or without comorbids
- May be cost effective down to BMI > 30

POLICY

A Study on the Economic Impact of Bariatric Surgery

Pierre-Yves Crémieux, PhD; Henry Buchwald, MD, PhD; Scott A. Shikora, MD; Arindam Ghosh, PhD; Haixia Elaine Yang, PhD; and Marric Buessing, BA

(Am J Manag Care. 2008;14(9):589-596)

- 3651 patients with matched controls
- Initial investment for laparoscopic bariatric surgery recovered through utilization savings in 2 years

Cost effectiveness

- Looking at all data suggests there likely is cost effectiveness of surgical management in Class 3, and Class 2 with comorbids, if utilized in employees that the employer desires to retain.

Benefit Design

Benefit Design

- Determine fundamental belief of options that company desires to offer their employees, then roll out in context of legislative requirements/constraints

- CDC LEAN Works!
  - http://www.cdc.gov/LEANWorks/costcalculator/index.html

What is a good investment? What works?

What is a good investment? What works?

- ACCOUNTABILITY
- People are more likely to do something if they are accountable to someone else
  - Twitter study – ½ lb per 10 tweets
- Narrow Networks and Partnerships

BMI 25 - 35

- Exercise activities should be made available to all employees
- Nutritional COACHING
  - MD participation difficult given level of reimbursement
  - Minimum of 12, preferably 26 sessions
- Compliance for both rewarded with “discounts” on health plan

BMI > 35 with comorbids or > 40

- Surgery
  - All procedures have similar up front costs
  - Limiting complications and required follow-up will lower long-term costs
- Least long-term issues associated with sleeve gastrectomy

BMI > 35 with comorbids or > 40

- Choose partners in narrow networks for quality and low complications over upfront costs
- ? Vested benefit
  - Avoids overuse

“Lose Weight, Gain Life!”

Jefferson Bariatric and Metabolic Surgery Program

www.jeffersonhospital.org/bariatric