



Information Session **Surgical Weight Loss**

LCDR Tamara Kindelan, MC, USN

CDR Henry Lin, MC, USN

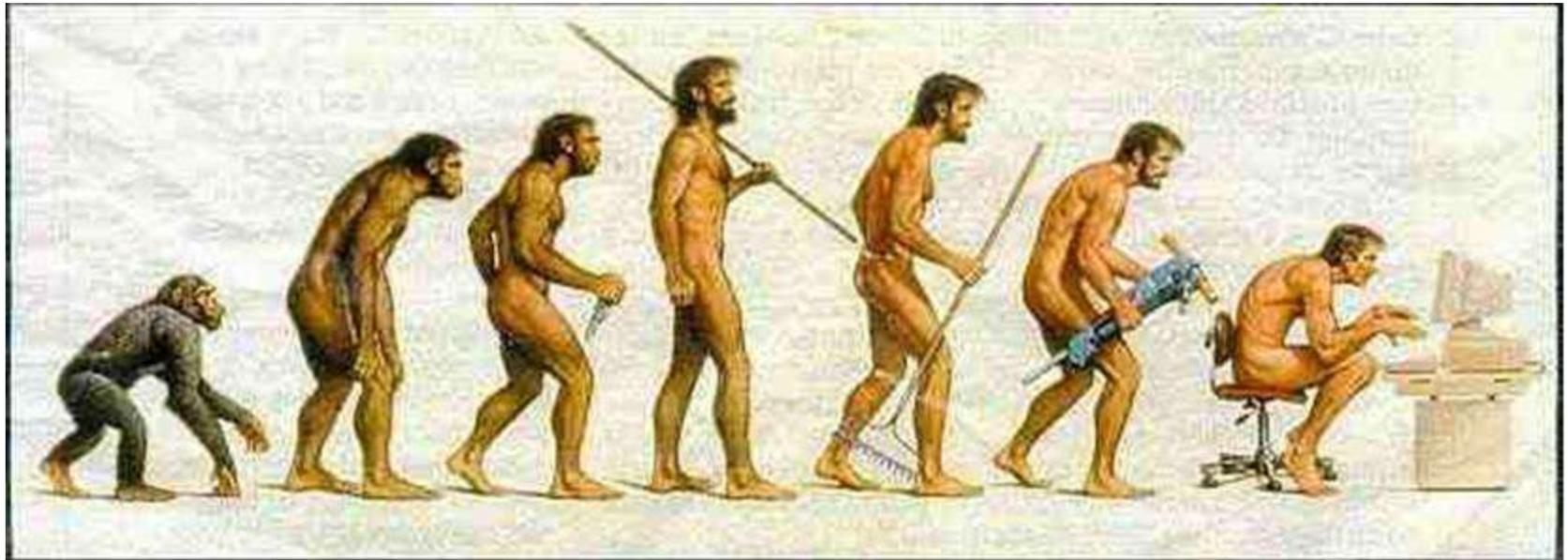
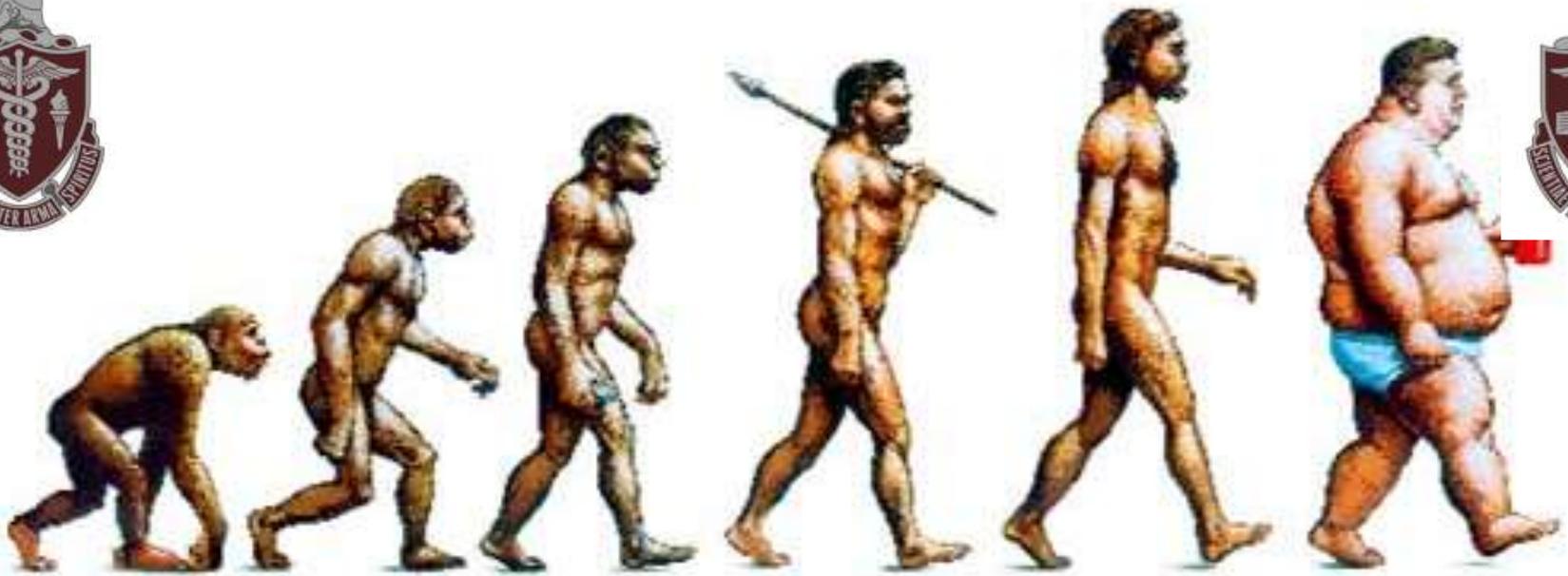
LtCol Scott Rehrig, USA



Bariatric Team Staff



- LCDR Mary Parker, NC, USN
 - Gen Surgery Division Officer
- Kenneth D. Witcher, RN
 - Bariatric Nurse
- Maj Kelli Metzger, USA
 - Bariatric Dietician
- Larolyn Young, MBA, MSHS
 - Bariatric Clinic Manager
- Amanda McCombs
 - Bariatric Admin Asst
- Eva Cruzata
 - Bariatric Scheduler





Overview

DEDICATED TO SERVICE



- Why You are here
- Indications for surgery
- Pathway for surgery
- Alternatives
- Surgical Procedures
- Risks and Benefits



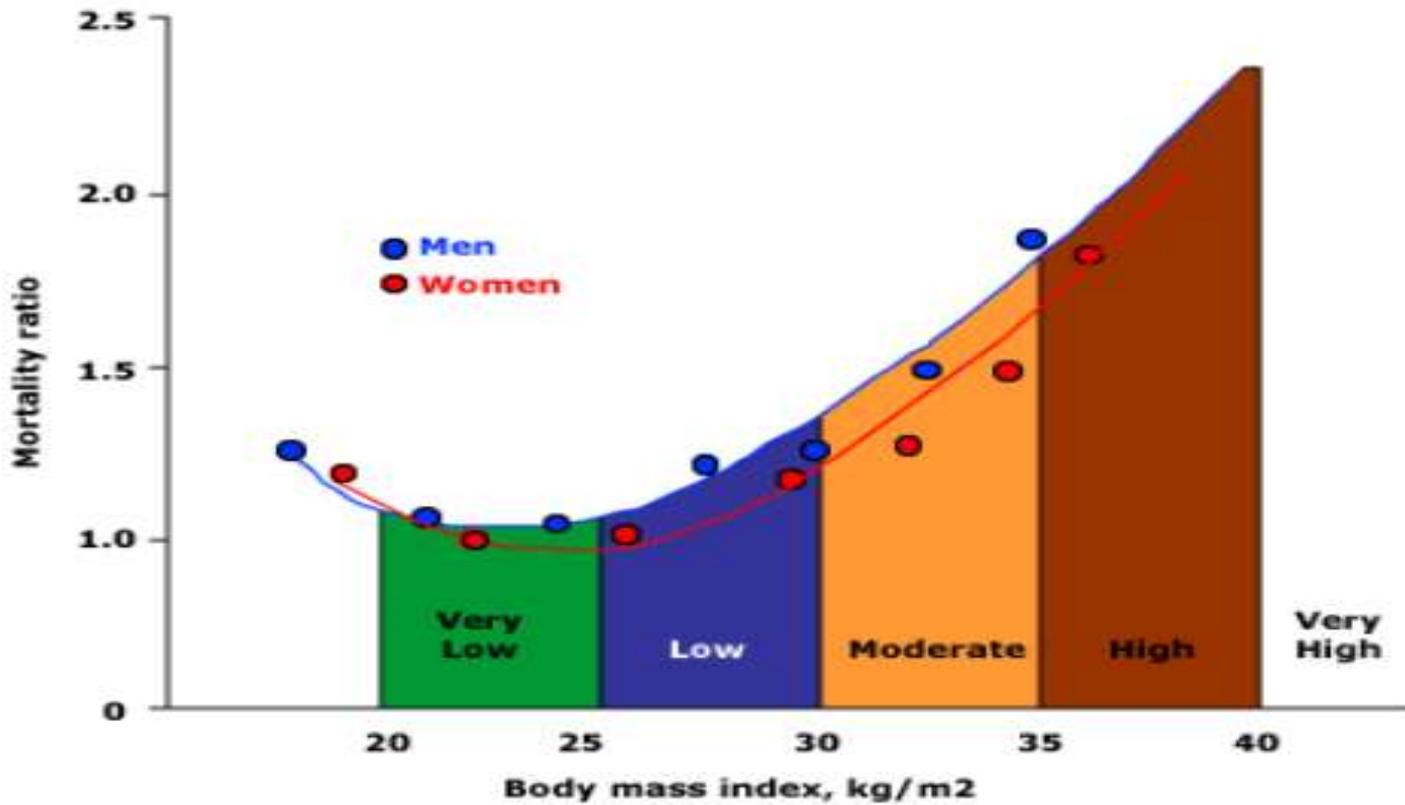
Scope of Problem



- **Global epidemic**
 - **300,000 US deaths per yr**
- **Economic impact**
 - **\$ 117 billion yr in US**
- **Negative Survival impact for BMI 45:**
 - White male **13yrs less**
 - Black males **20yrs less**
 - Black women **5yrs less**
 - White women **8 yrs less**



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.*



BMI Calculation



<http://www.healthcentral.com/diet-exercise/ideal-body-weight-3146-143.html>

BMI Calculation

<http://www.healthcentral.com/diet-exercise/ideal-body-weight-3146-143.html>

<http://www.nhlbisupport.com/bmi/>



BMI and Risk Levels

	BMI	Risk of Comorbidity
Normal	18-24	Average
Overweight	25-29	Increased
Obesity class I	30-34	Moderate
Obesity class II (morbid)	35-39	Severe
Obesity class III (severe morbid)	40 +	Very Severe



Obesity Comorbidities



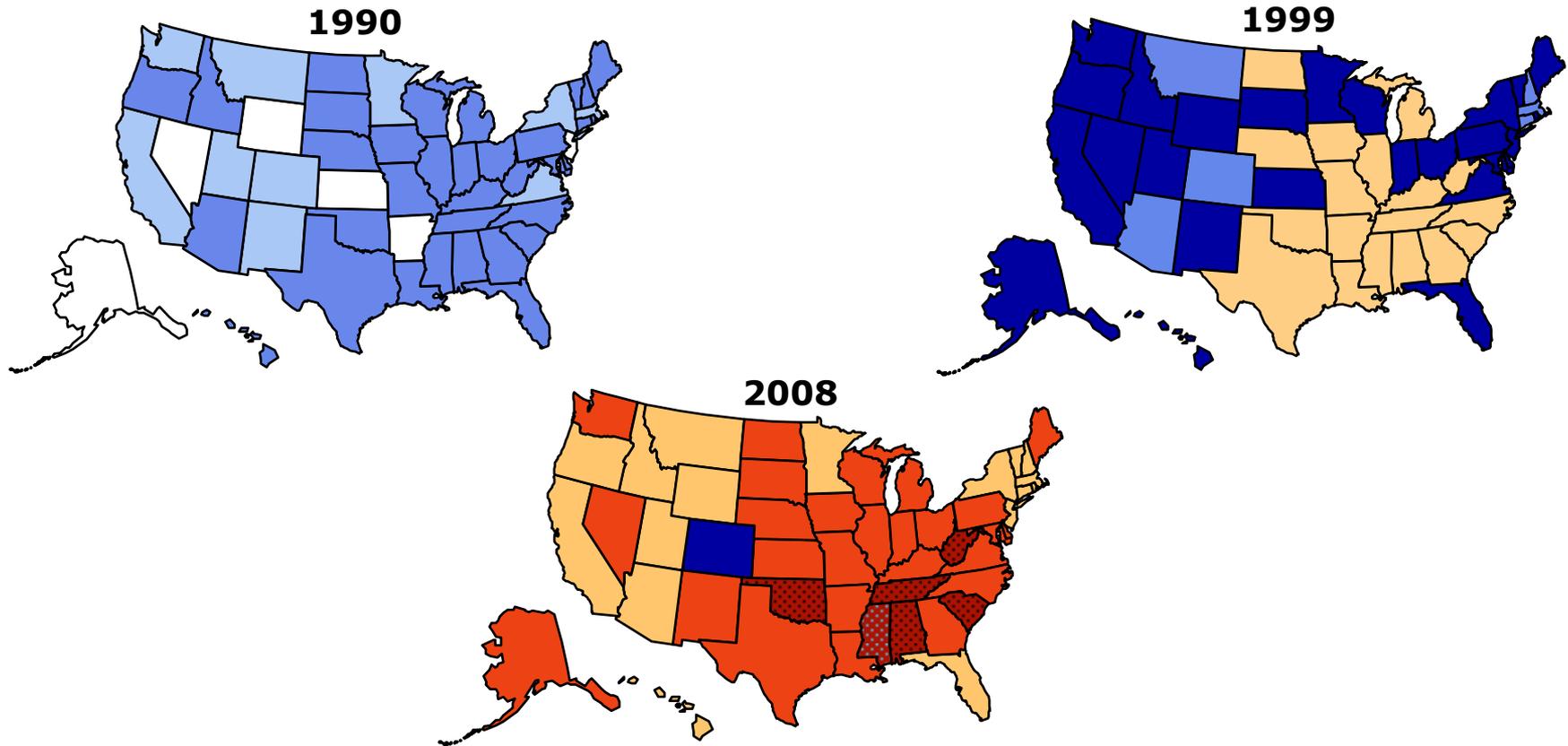
“Once BMI values defining morbid obesity are reached, we are addressing a disease – a life-shortening, incapacitating, malignant disease”

Henry Buchwald MD PhD

Obesity Trends* Among U.S. Adults

BRFSS, 1990, 1999, 2008

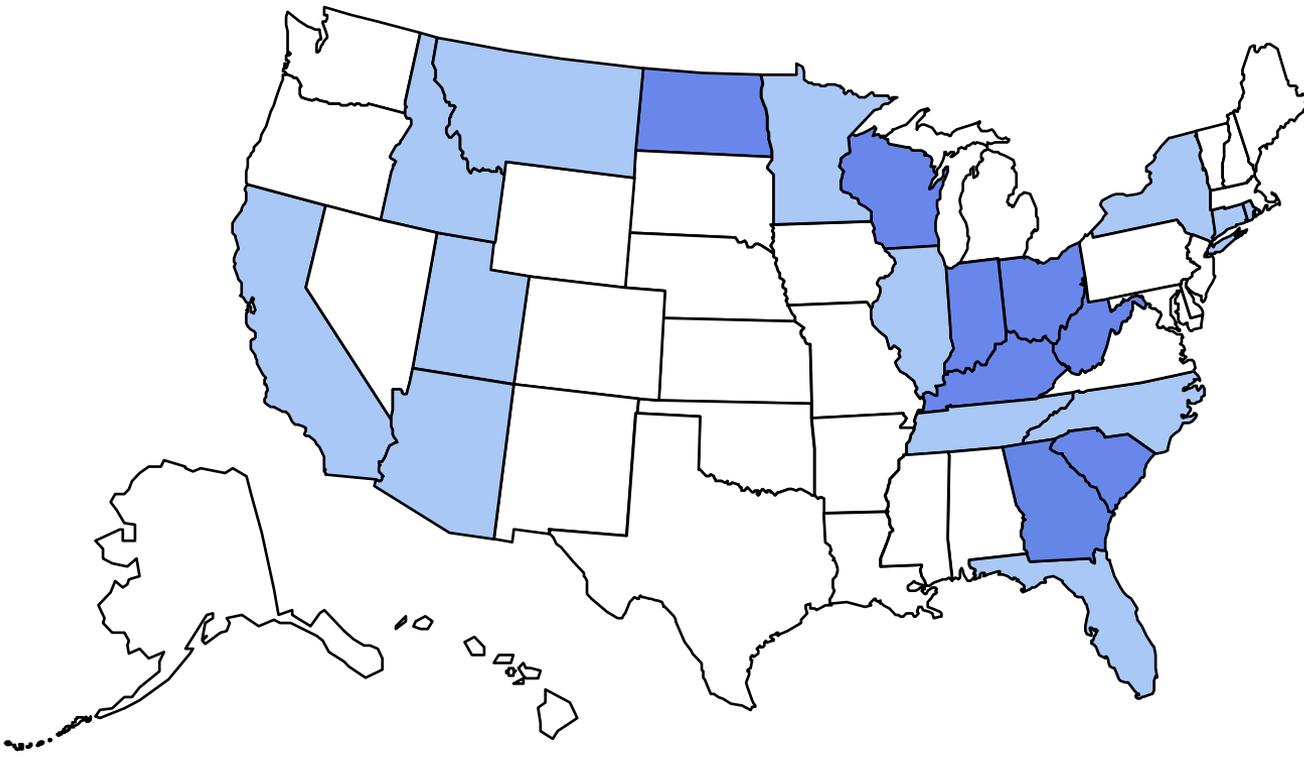
(*BMI ≥ 30 , or about 30 lbs. overweight for 5'4" person)



Obesity Trends* Among U.S. Adults

BRFSS, 1985

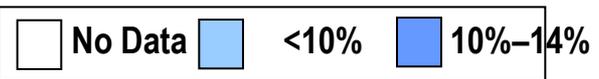
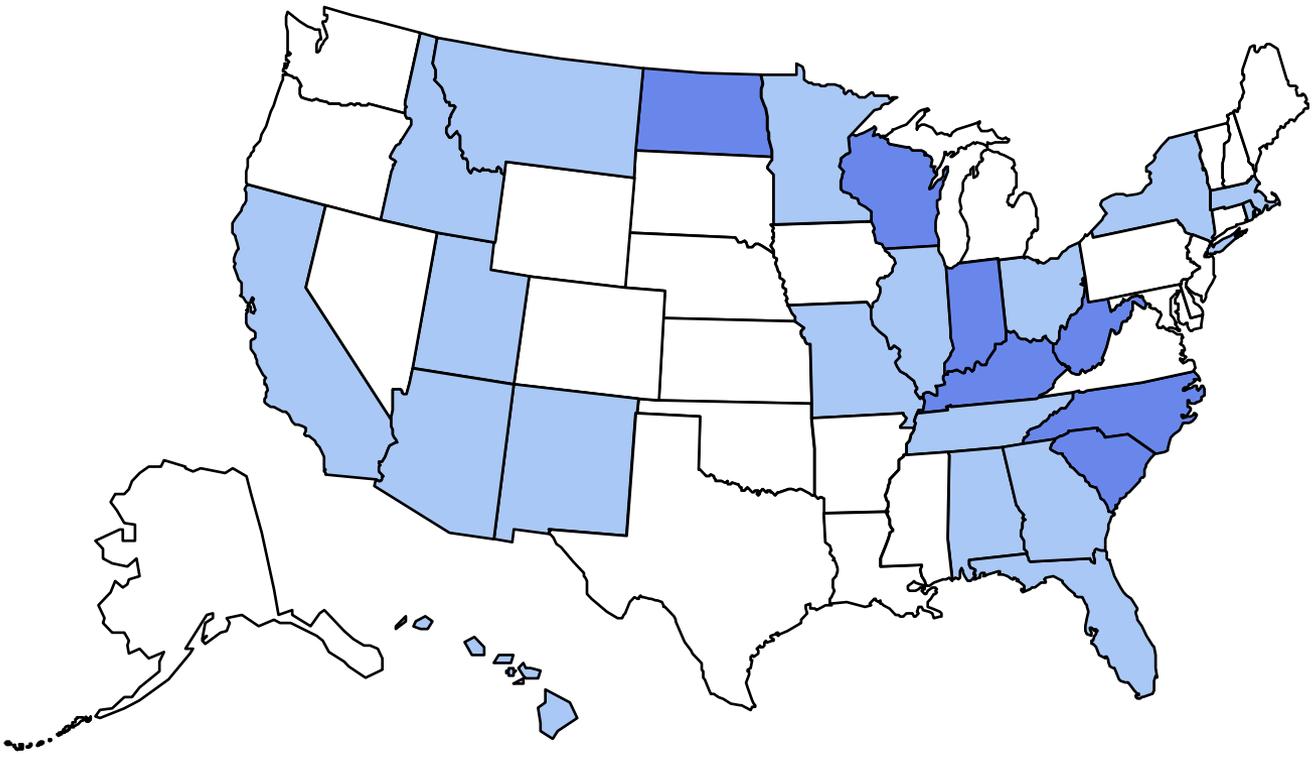
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Obesity Trends* Among U.S. Adults

BRFSS, 1986

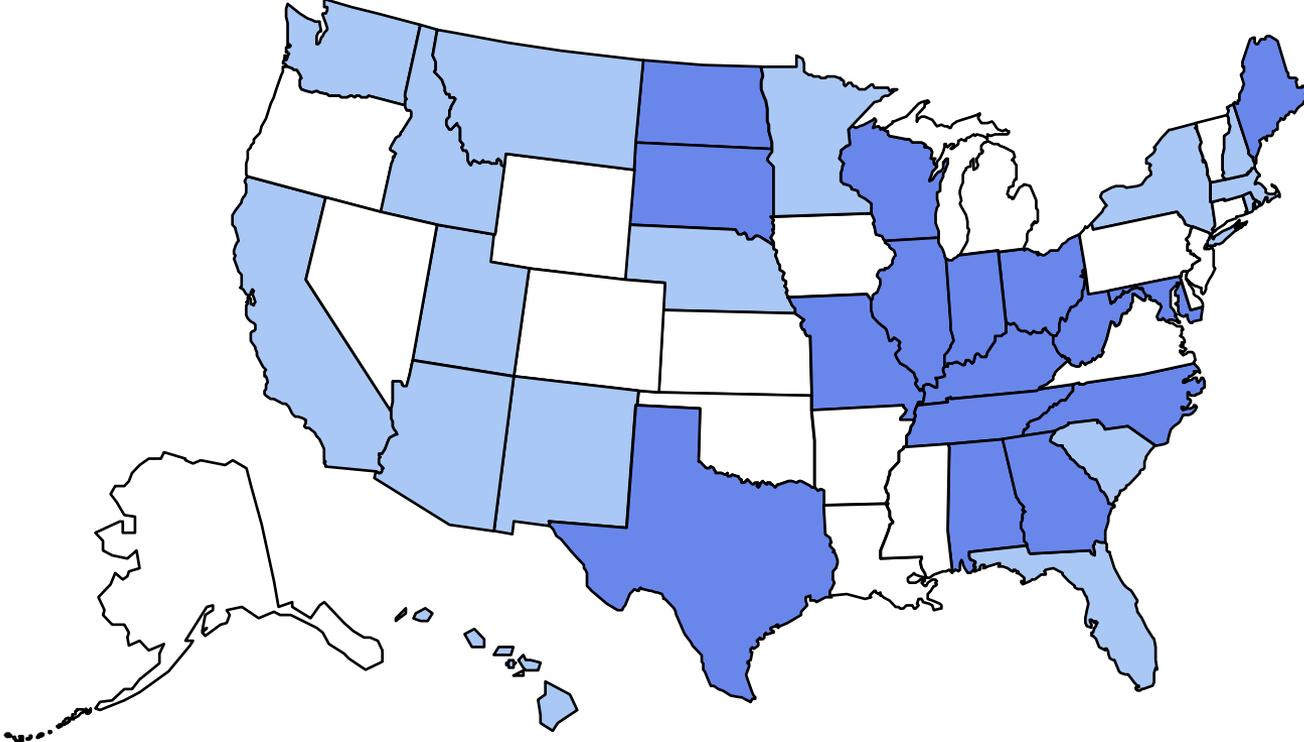
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Obesity Trends* Among U.S. Adults

BRFSS, 1987

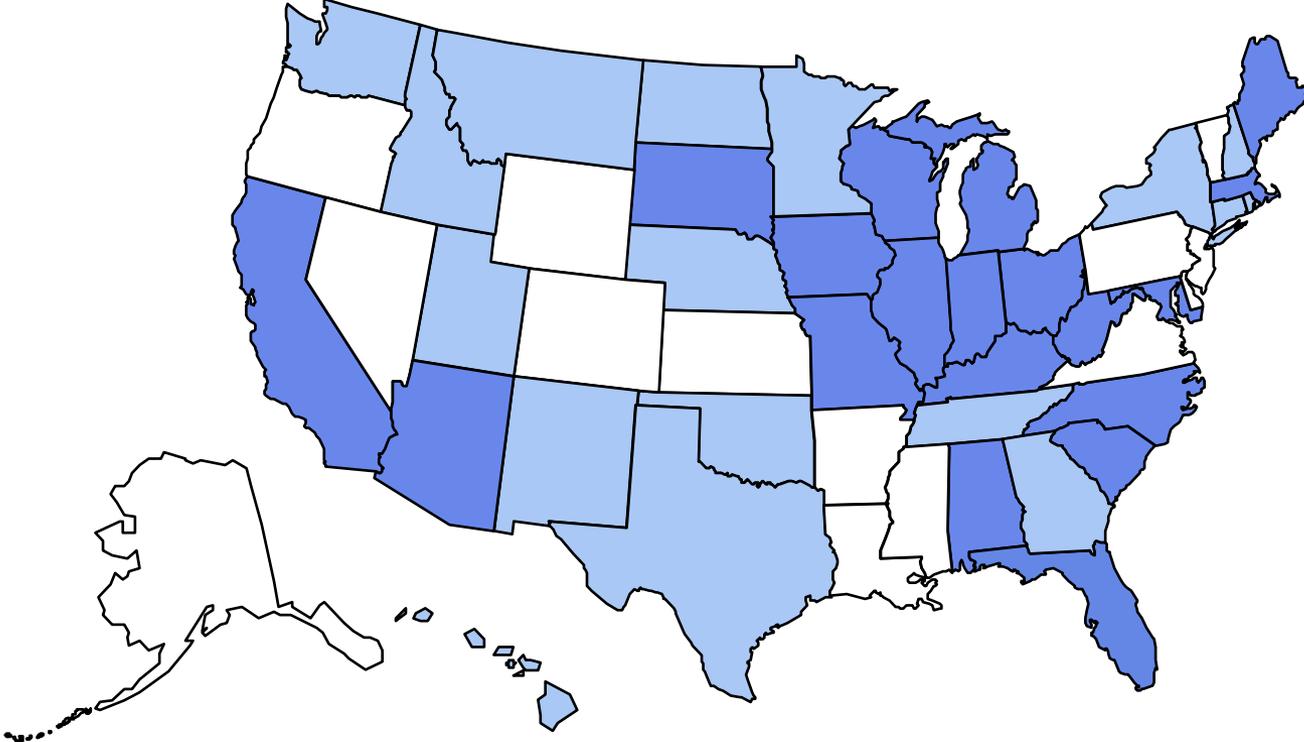
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Obesity Trends* Among U.S. Adults

BRFSS, 1988

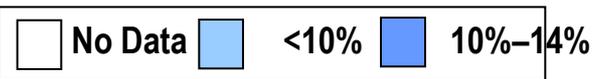
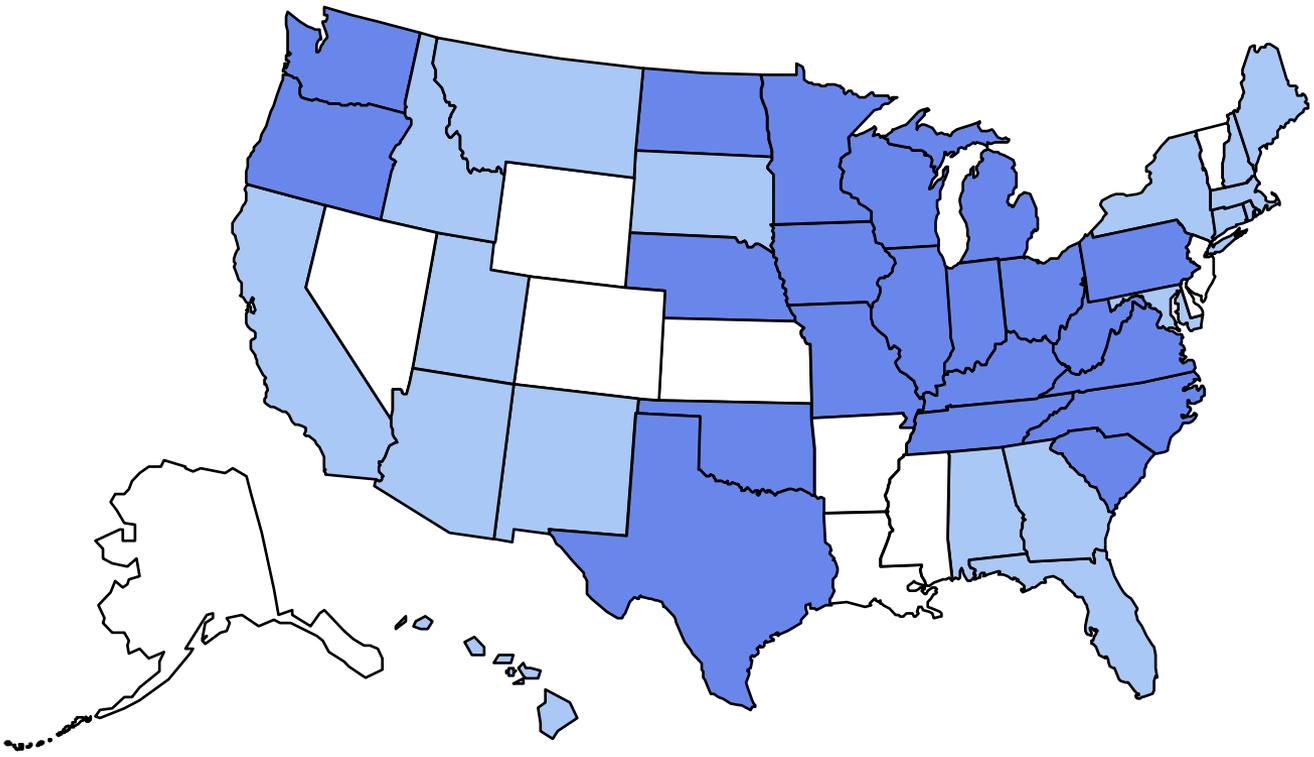
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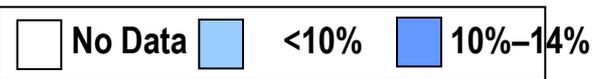
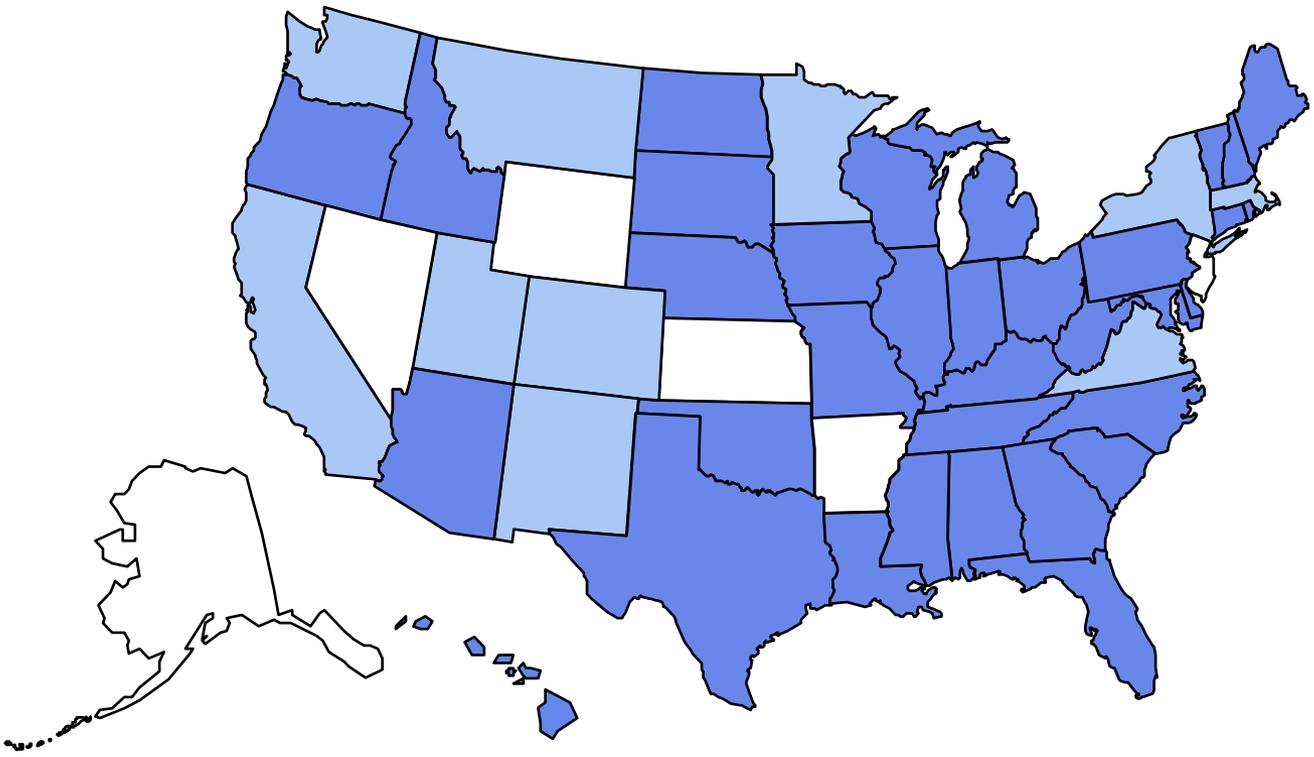
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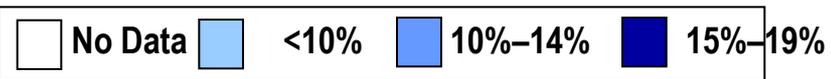
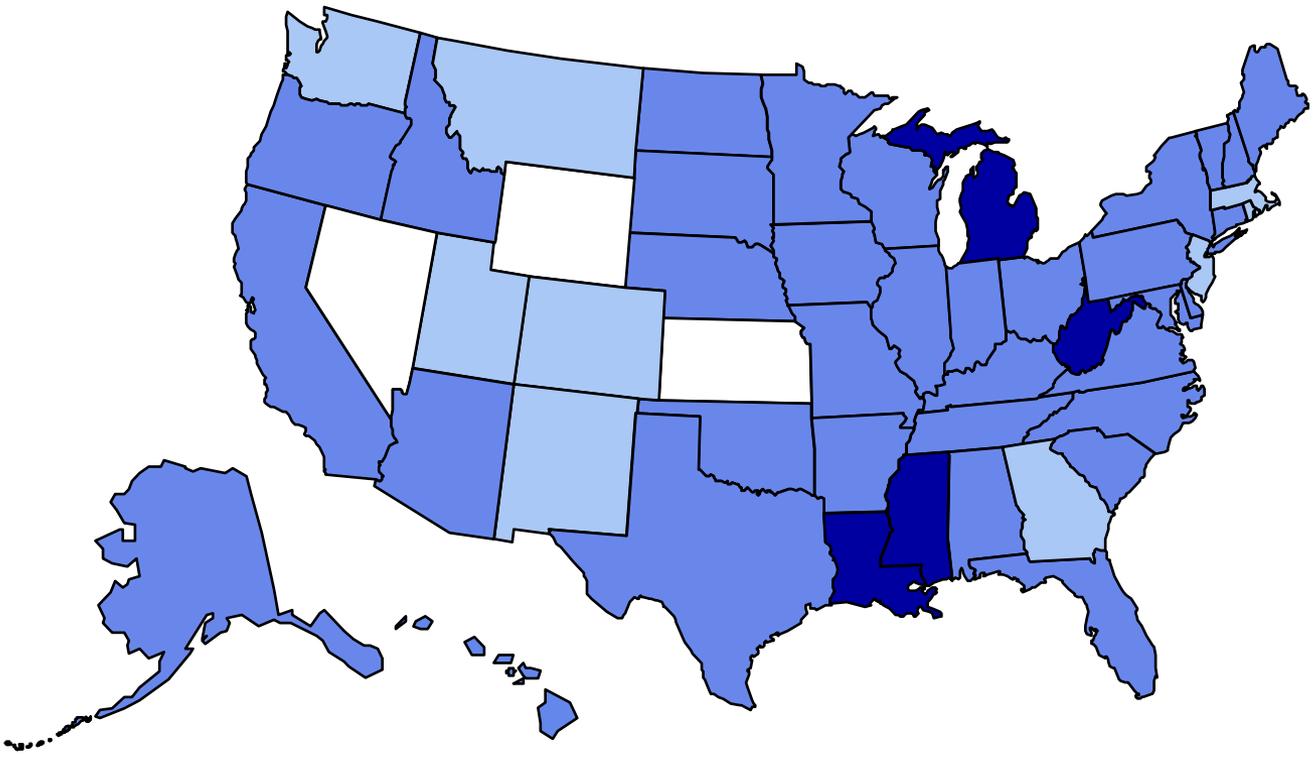
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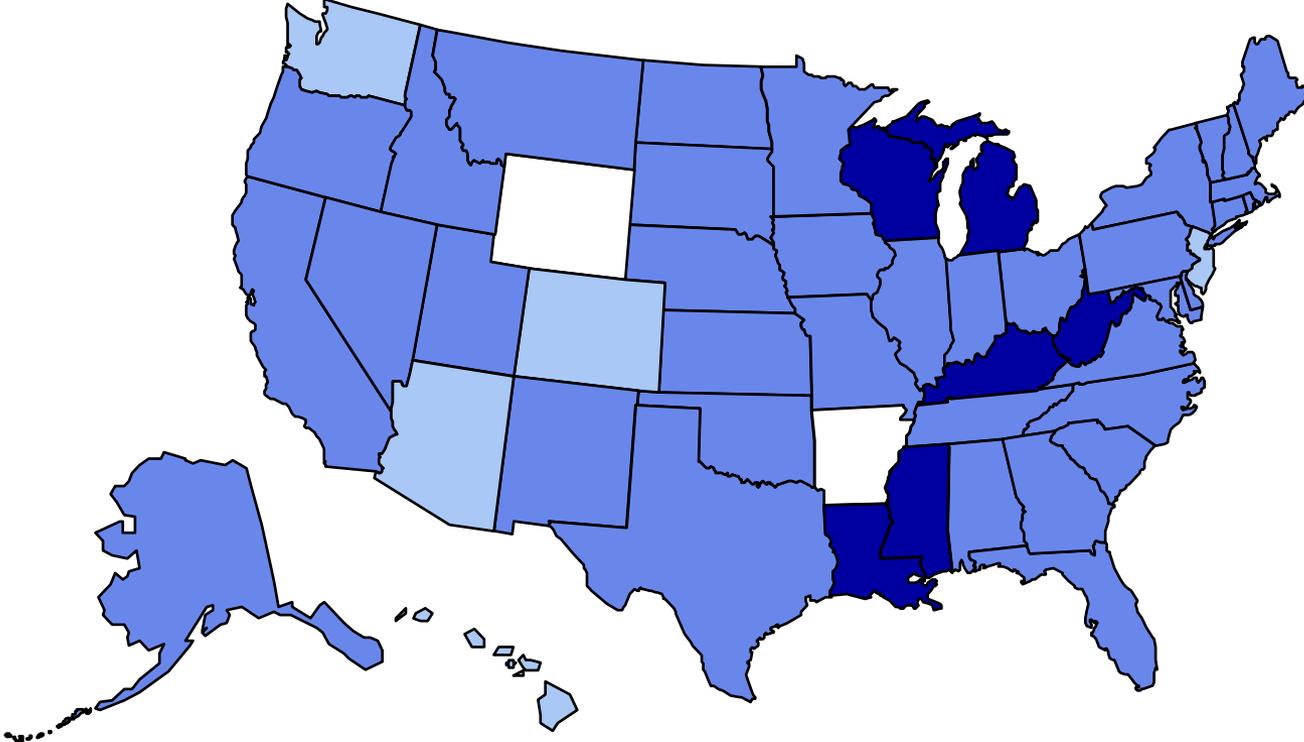
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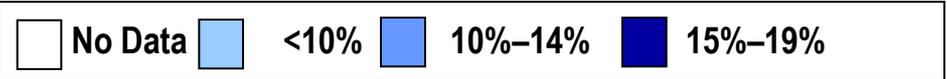
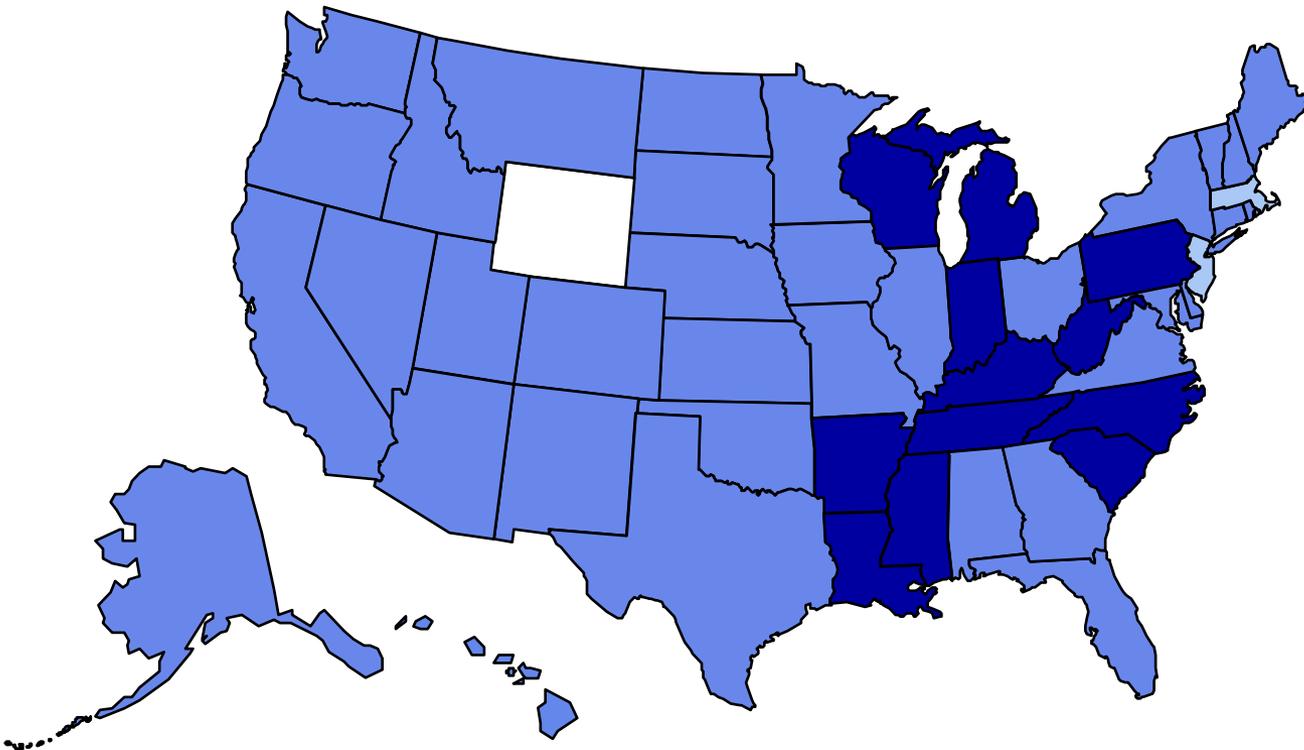
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BRFSS, 1993

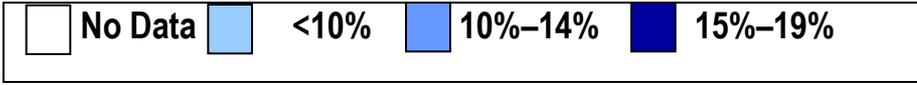
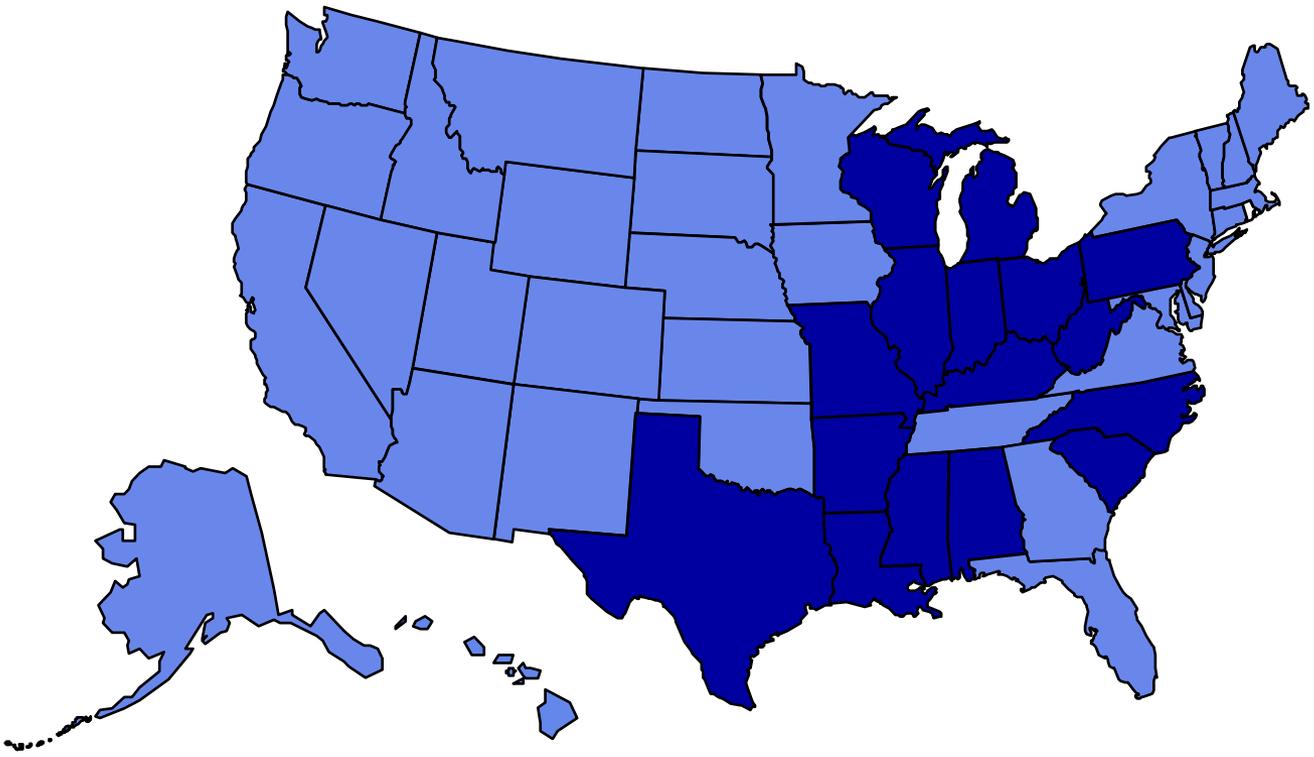
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Obesity Trends* Among U.S. Adults

BRFSS, 1994

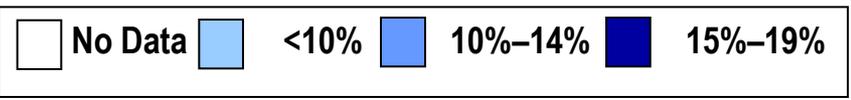
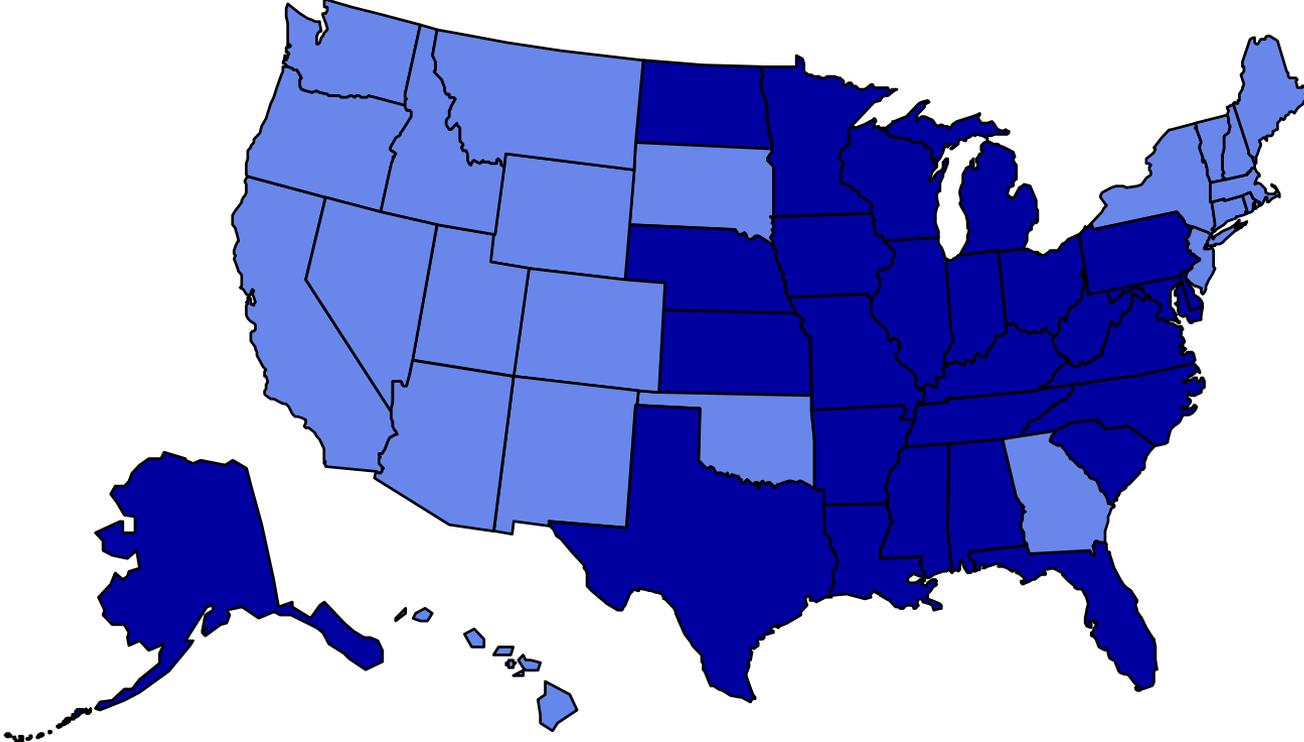
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Obesity Trends* Among U.S. Adults

BRFSS, 1995

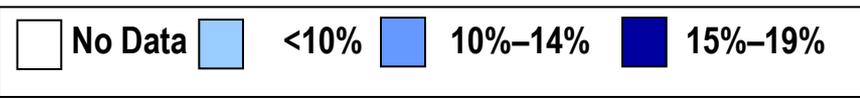
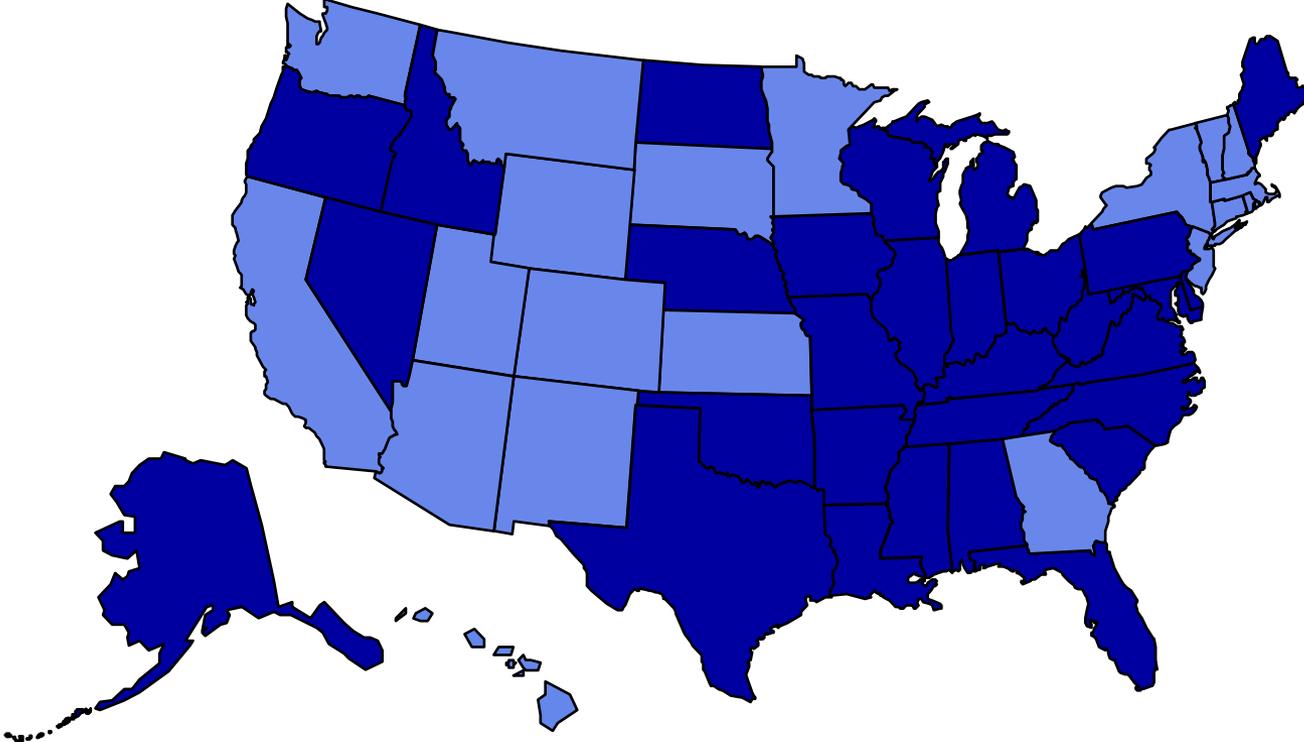
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Obesity Trends* Among U.S. Adults

BRFSS, 1996

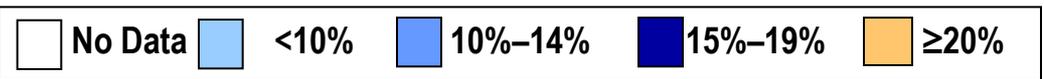
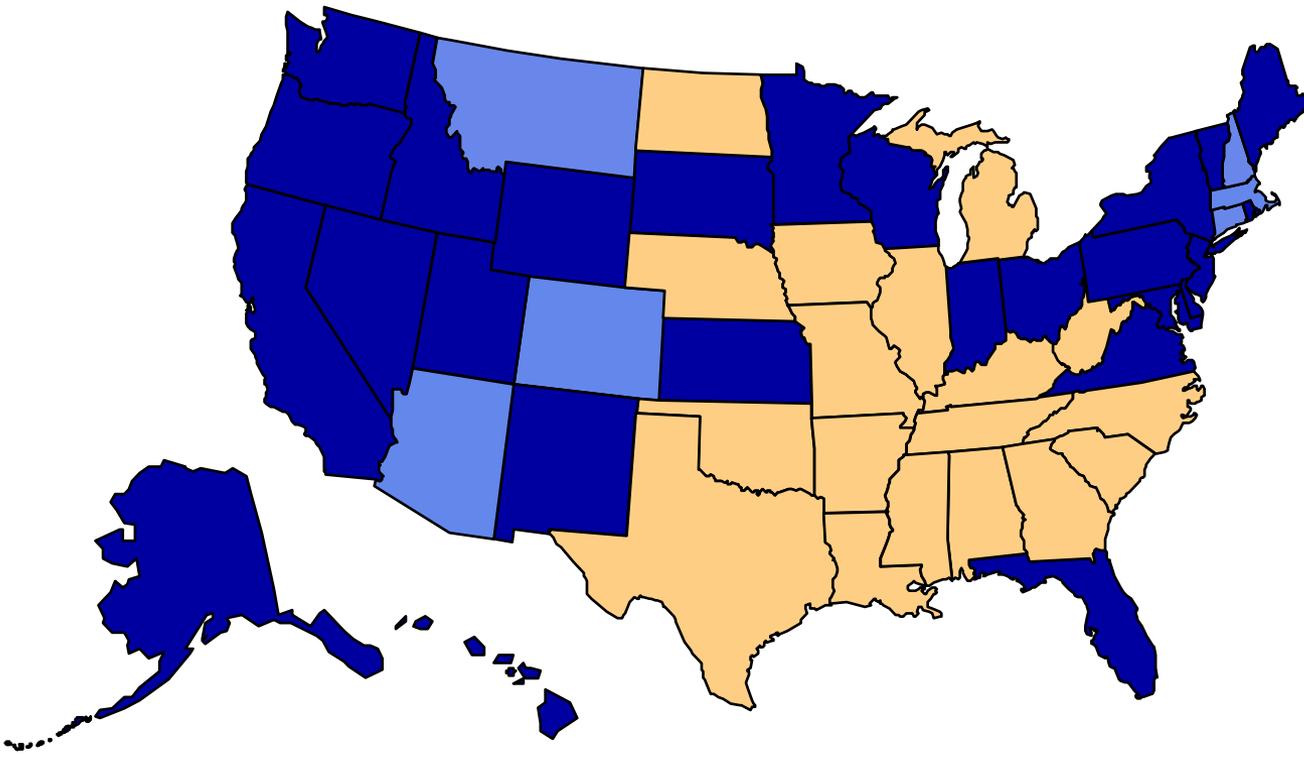
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Obesity Trends* Among U.S. Adults

BRFSS, 1999

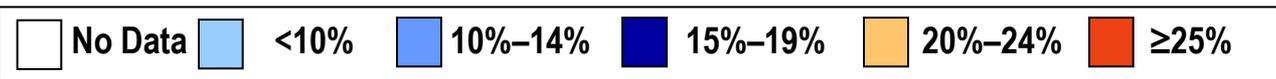
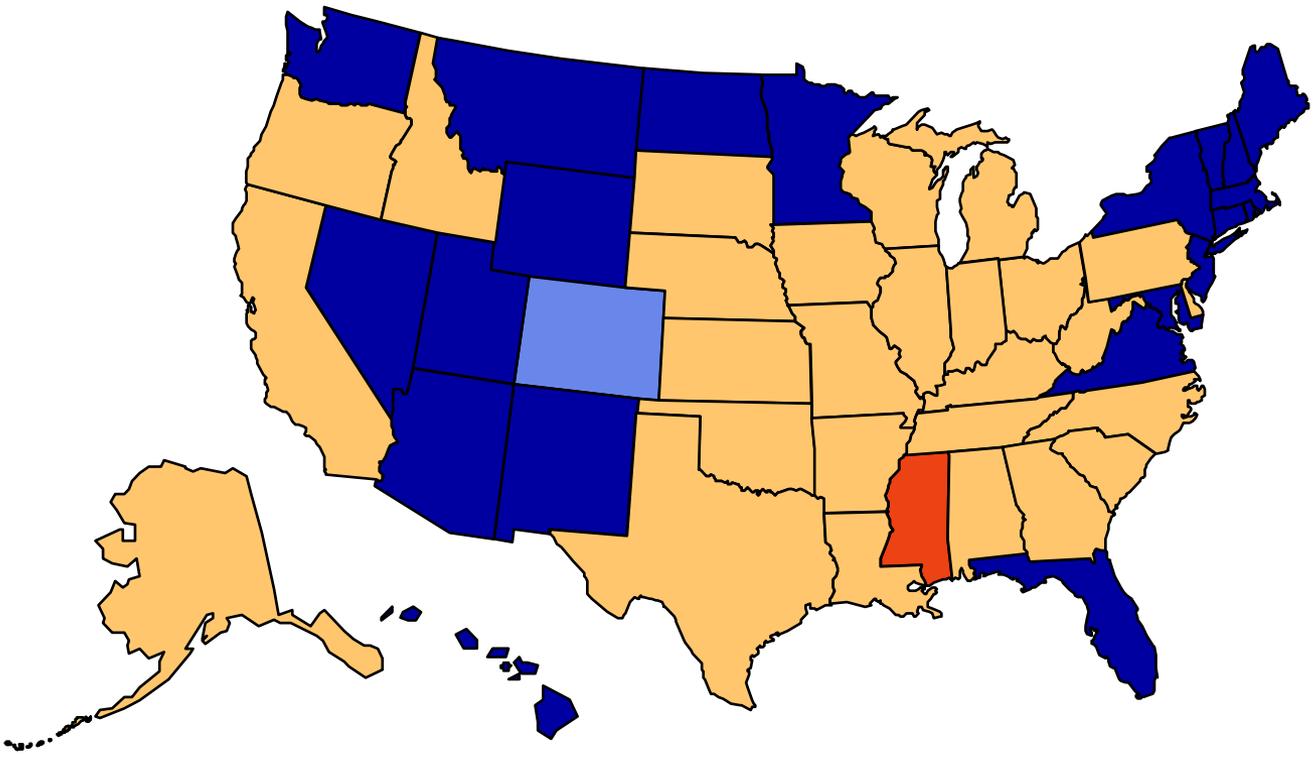
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Obesity Trends* Among U.S. Adults

BRFSS, 2001

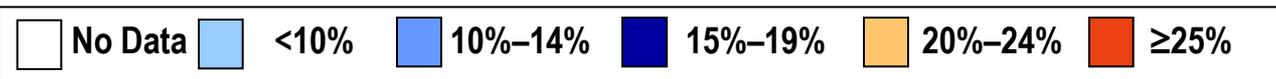
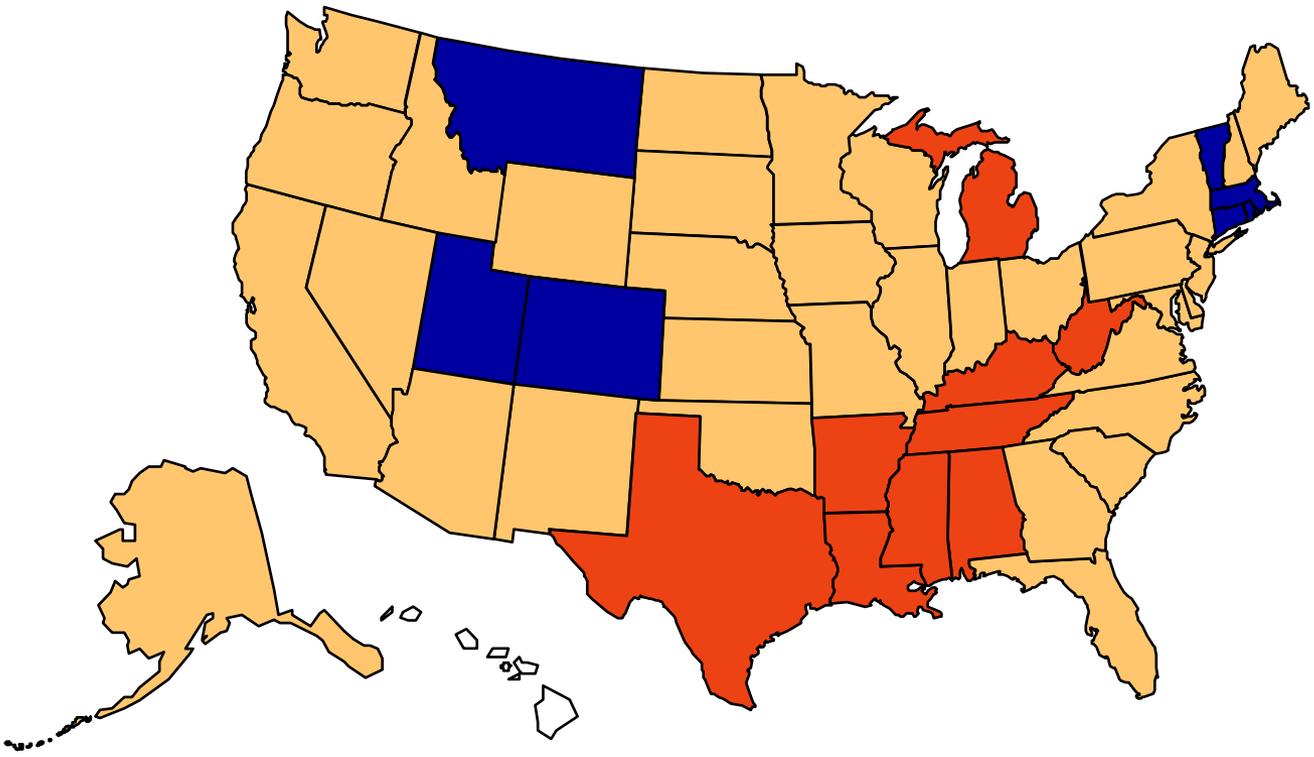
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Obesity Trends* Among U.S. Adults

BRFSS, 2004

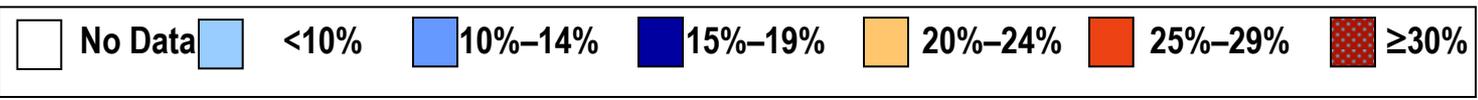
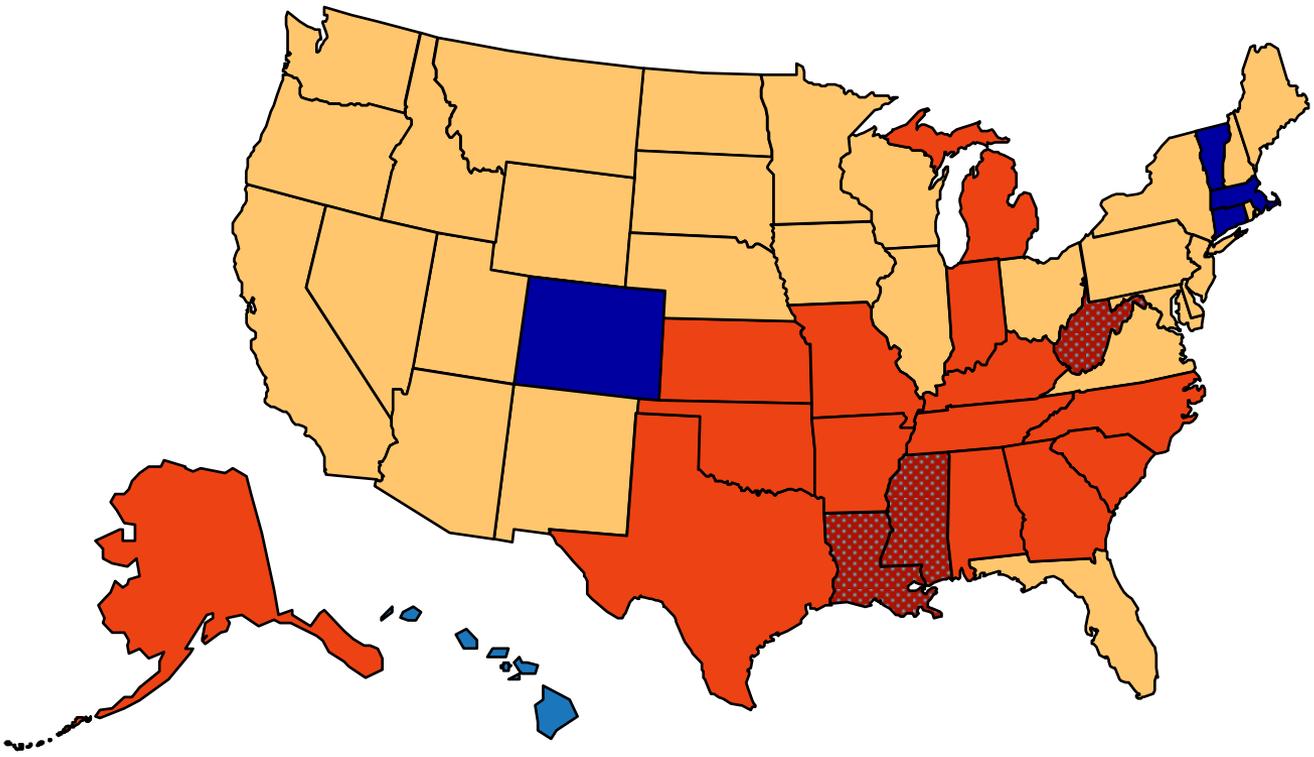
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Obesity Trends* Among U.S. Adults

BRFSS, 2005

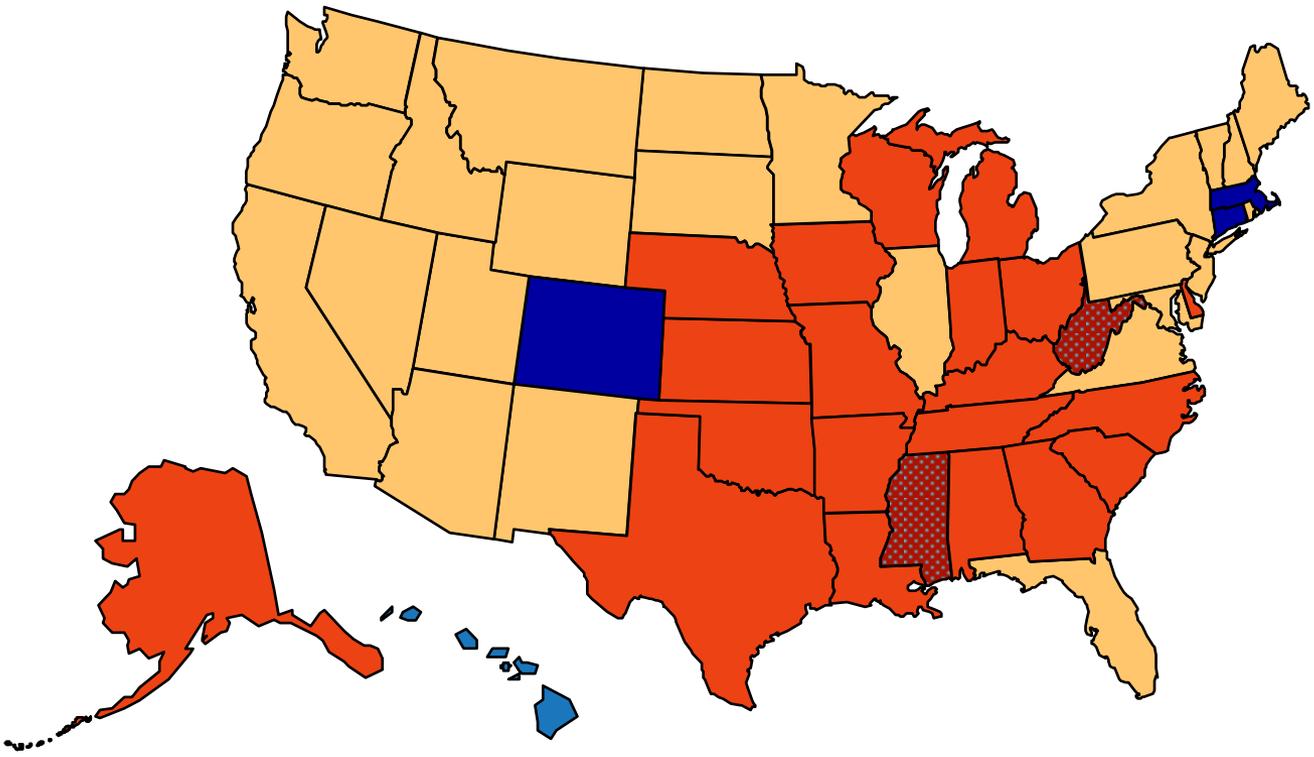
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Obesity Trends* Among U.S. Adults

BRFSS, 2006

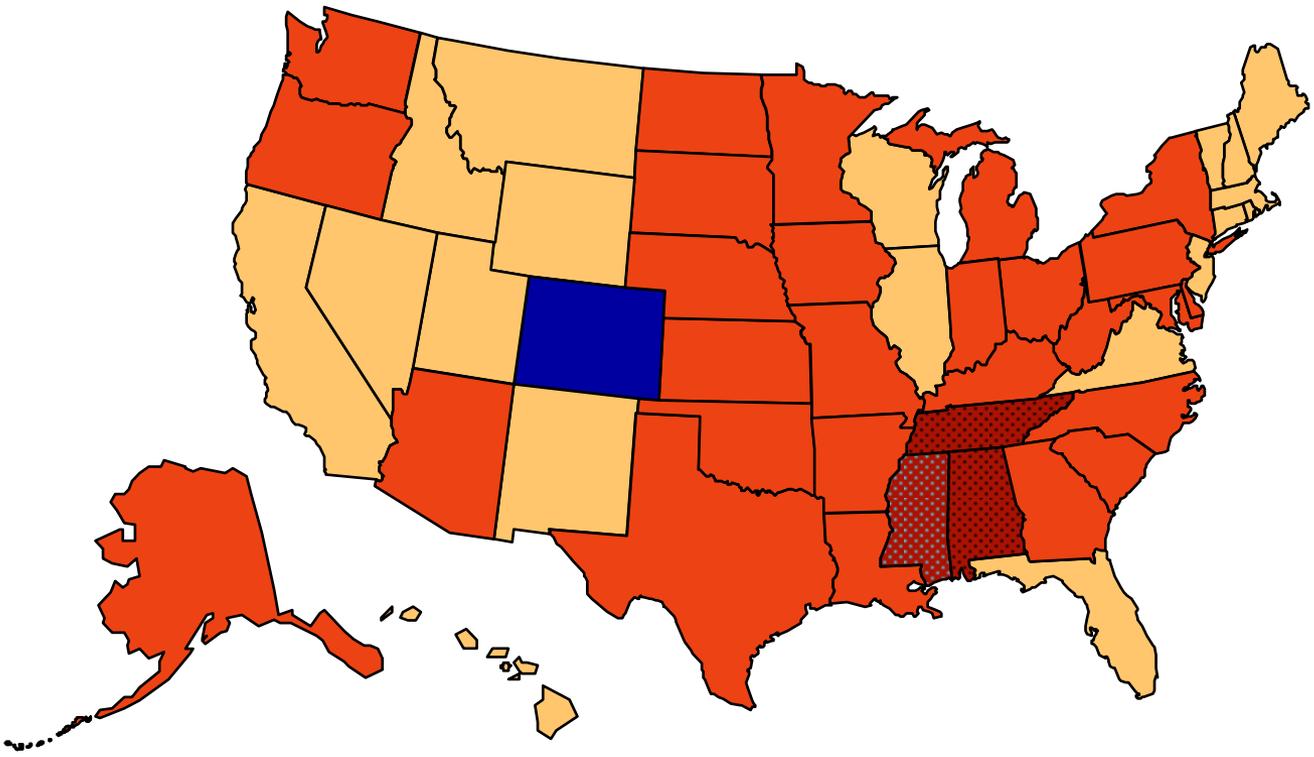
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Obesity Trends* Among U.S. Adults

BRFSS, 2007

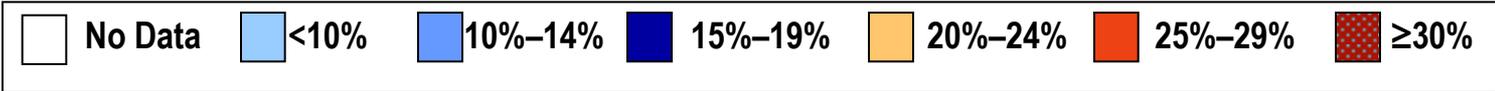
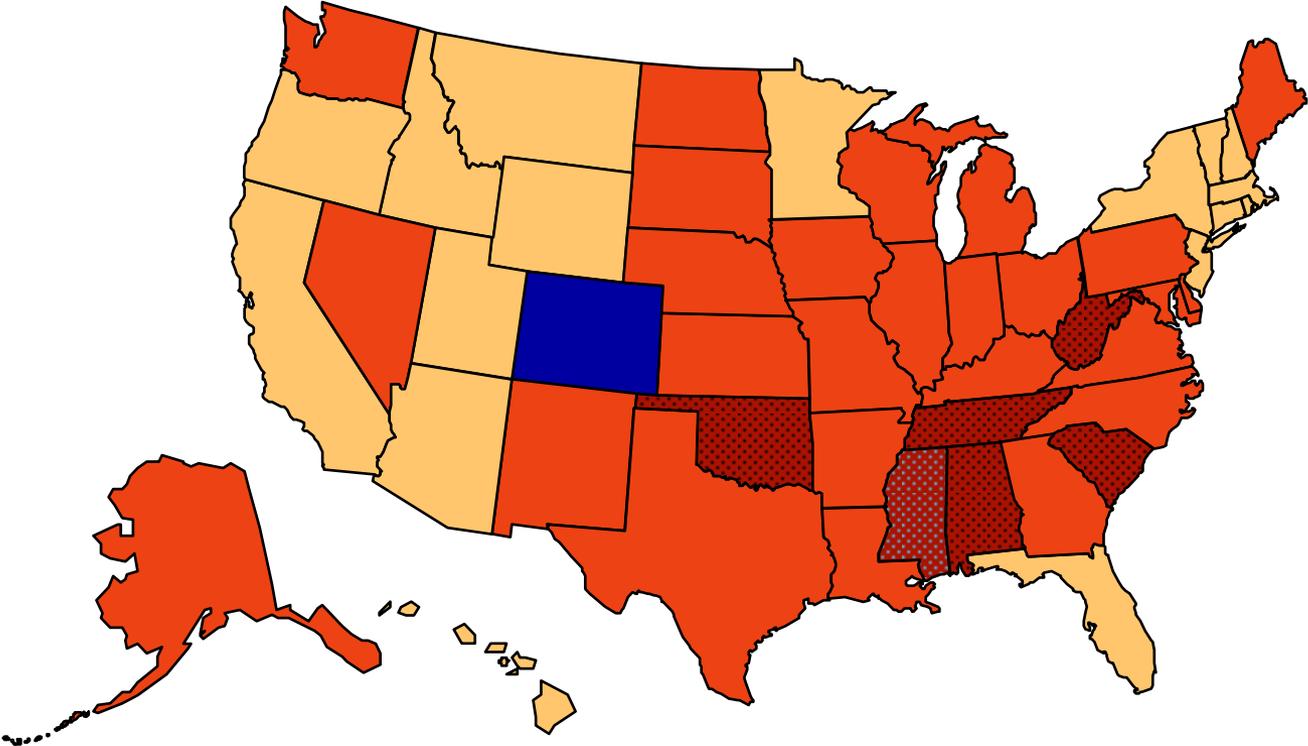
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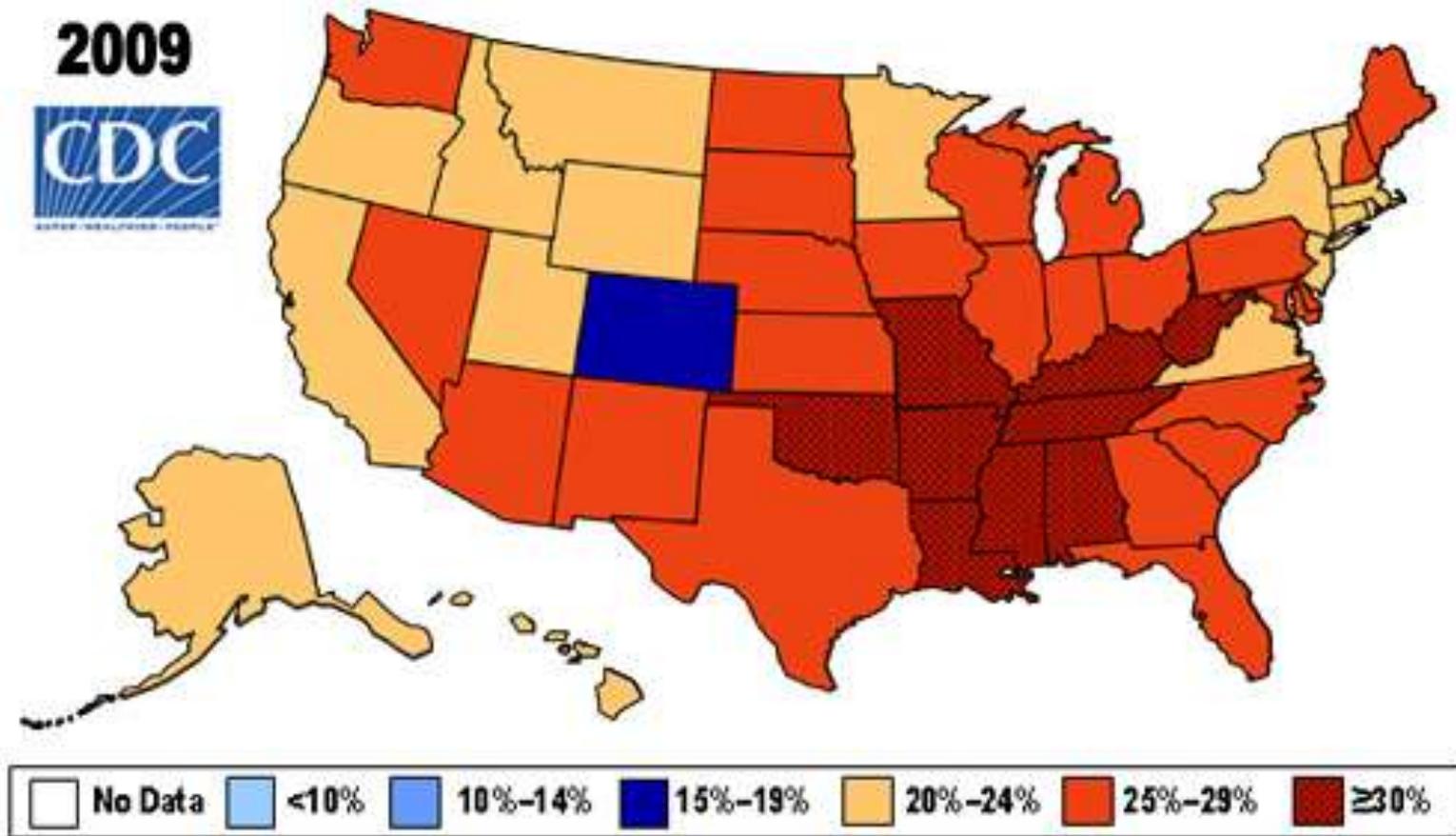
Obesity Trends* Among U.S. Adults

BRFSS, 2008

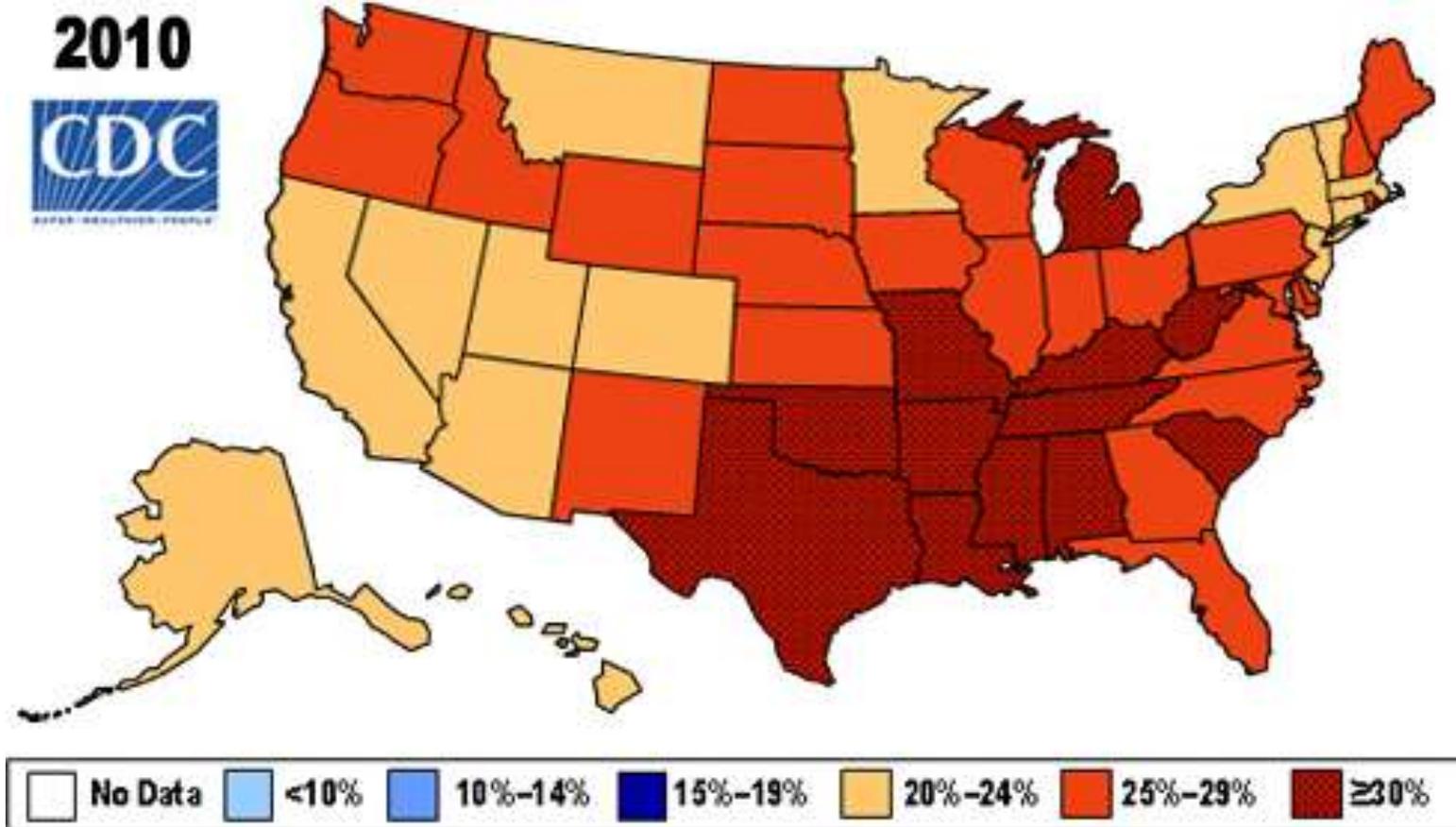
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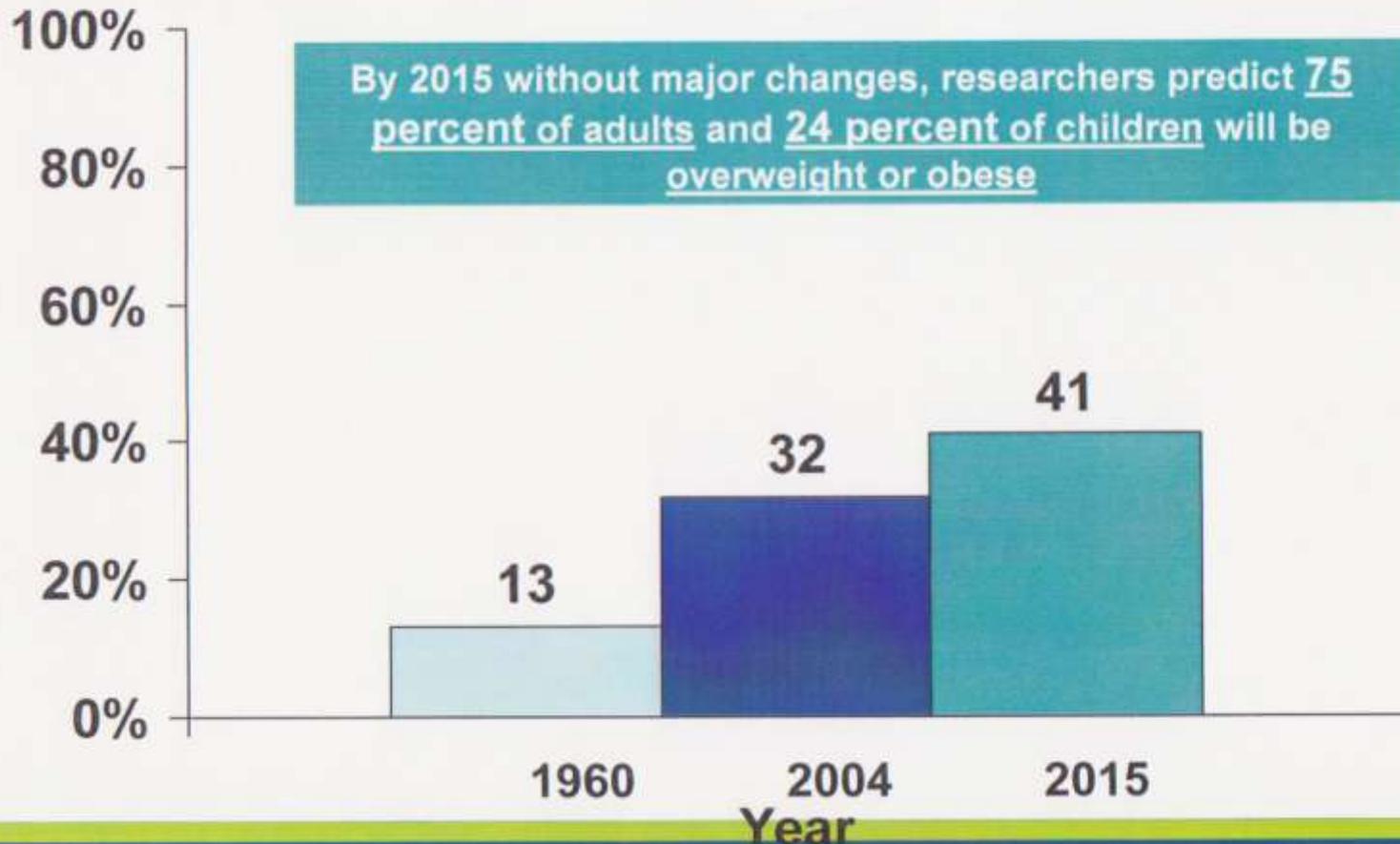


Obesity Trends* Among U.S. Adults

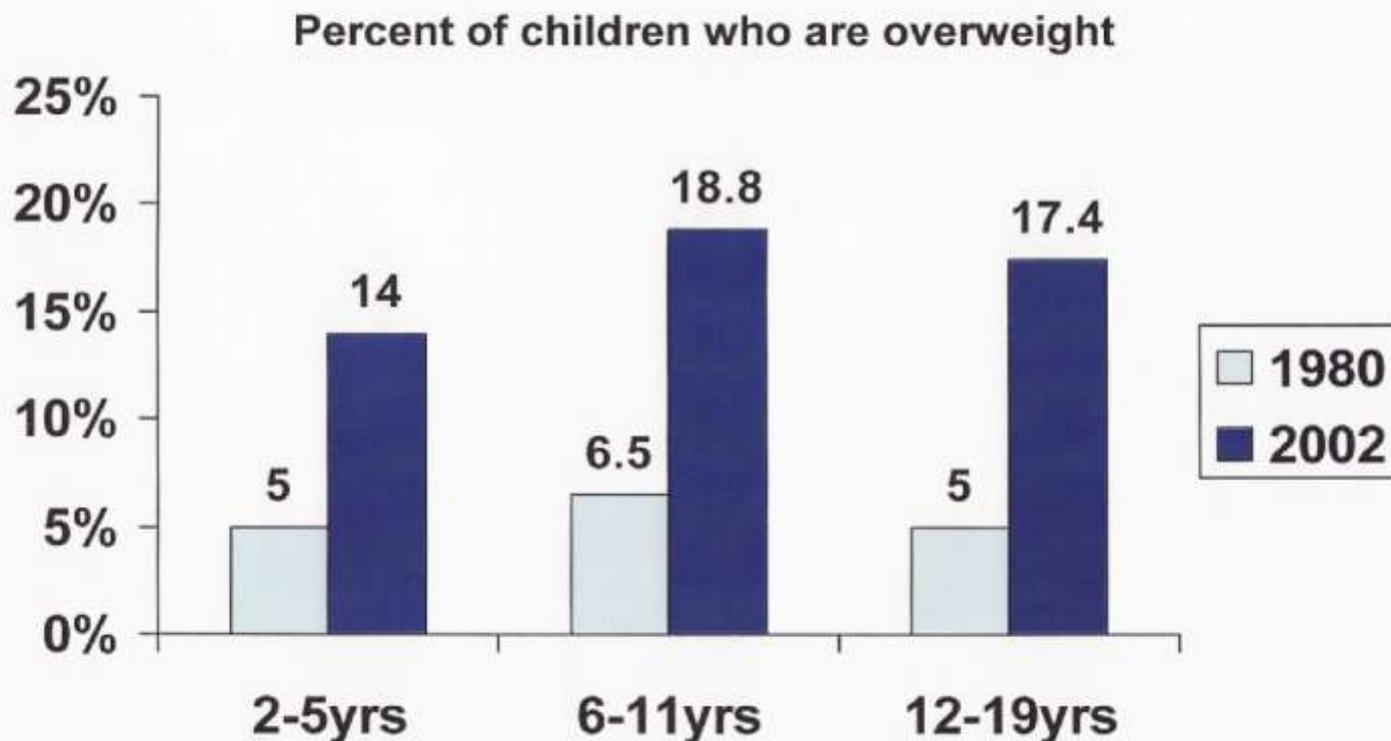


The rate of obesity is also expected to increase, and contribute to rising rates of chronic diseases

By 2015, it is predicted that 41 percent of Americans will be obese



The share of children who are overweight has more than doubled in the U.S. over the past two decades





PCM assistance w/ Bariatric Surgery

Medications:

- Gastric Bypass pts
 - **No NSAIDs**
 - **No ASA** unless...
 - Even baby ASA
 - **Liquid** formulation vs. ***pill size***
 - Trial pre-op
- No bisphosphonates
- No **metformin** pre-op
- No **OCPs** (> 1mo. + post-op contraception x 2y)

Supplements

- Gastric Bypass
 - Fe²⁺
 - Folate
 - Vit B12
- Calcium **CITRATE**
 - (>1000 mg/ d)
 - Better absorbed
- Vitamin D
- **Potassium** in *liquid* form

Treatment Options for Obesity

Diet and Exercise alone: 10% success in permanent weight loss

- **MEDICAL** :

- **0-10 kg**
- Medications
 - **LIFE-LONG**
- Diabetes mellitus is
 - **NOT** resolved

- **SURGICAL**:

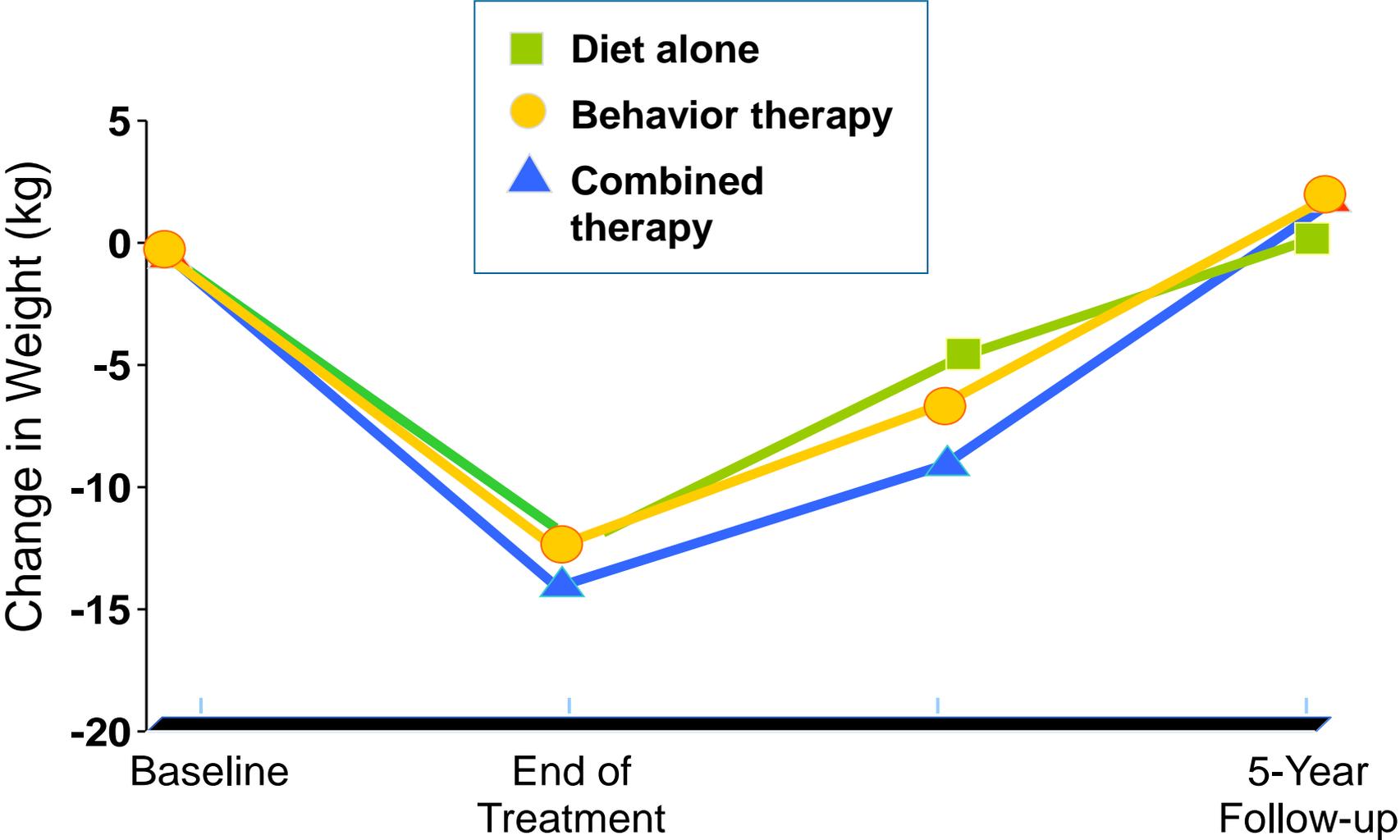
- **20-45 kg**
- Medications
 - **DISCONTINUED**
 - or dosages decreased
- Diabetes mellitus is
 - **RESOLVED**
 - **50-85%**

Obesity Treatment Guide

	BMI Category (kg/m ²)				
Treatment	25-26.9	27-29.9	30-34.9	35-39.9	≥40
Diet, Exercise, Behavior Tx	With comorbidities	With comorbidities	+	+	+
Pharmacotherapy		With comorbidities	+	+	+
Surgery				With comorbidities	With comorbidities

Source: *The Practical Guide: Identification, Evaluation, and Treatment of Overweight and Obesity in Adults*. National Institutes of Health. National Heart, Lung, and Blood Institute. October 2000, NIH Publication No. 00-4084.

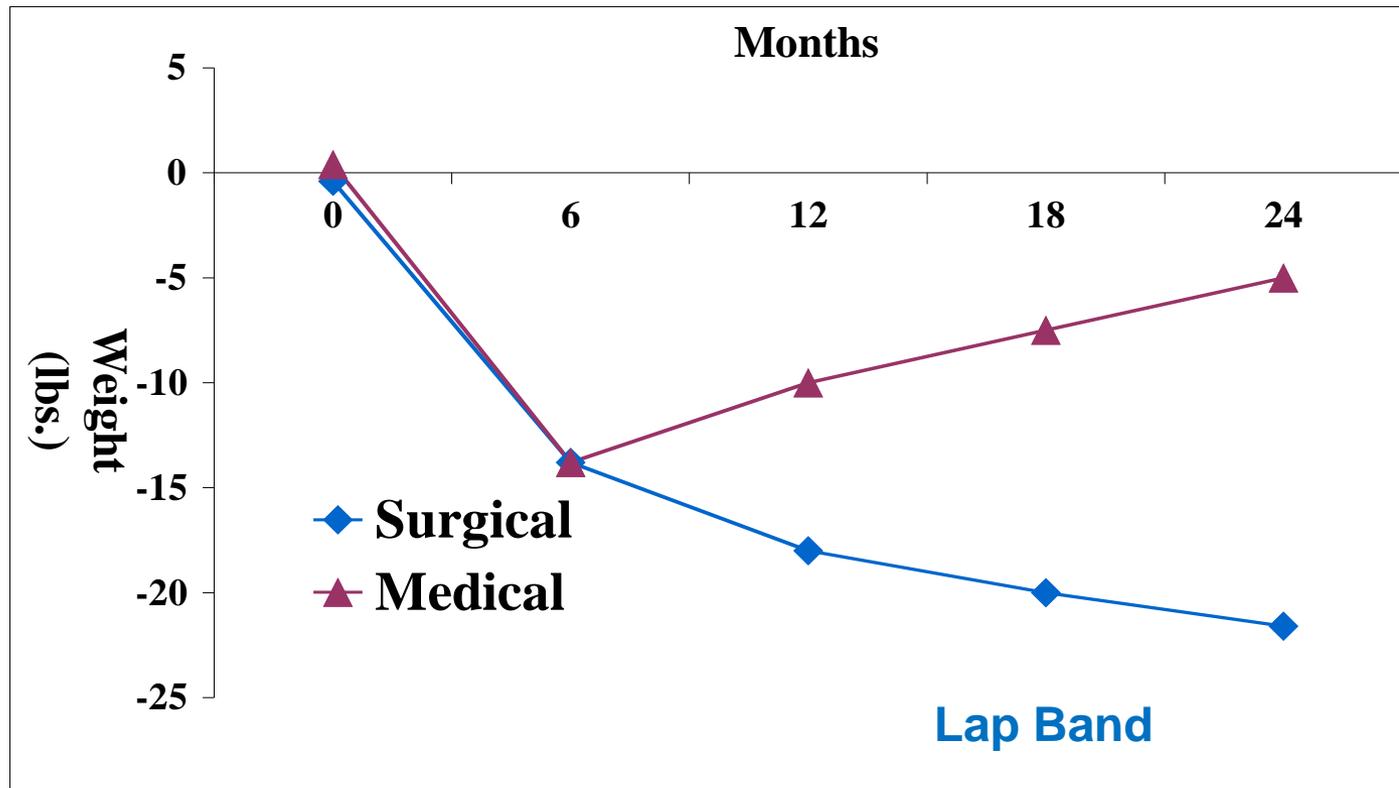
Short-term Obesity Therapy Does Not Result in Long-term Weight Loss



Source: Wadden TA, Sternberg JA, Letizia KA, et al. Treatment of obesity by very low calorie diet, behavior therapy, and their combination: a five-year perspective. *Int J Obes.* 1989;13 Suppl 2:39-46

Medical vs. Surgical Therapy for Obesity

Medical (lifestyle changes and pharmacotherapy) vs Surgical Therapy for Obesity



Source: O'Brien PE, Dixon JB, Laurie C, et al. Treatment of mild to moderate obesity with laparoscopic adjustable gastric banding or an intensive medical program. *Ann Intern Med.* 2006;144:625-633.

Why Current FDA-Approved Weight-Loss Drugs Don't Work

- May **not** sustain **long-term** weight loss in most patients^{1,2,4}
 - Only 2 obesity drugs are approved for long-term weight loss; efficacy beyond 2 and 4 years is unknown as clinical trials are limited
- Minority of patients lose **5 –10%** of their weight^{1,3}
- Hunger is not the only trigger for eating
 - Powerful forces drive eating
 - Our culture doesn't just use food for nutritional reasons
 - People eat for comfort
 - Behavior restructuring therapy may be useful in combination
 - Genetics and faulty metabolism

Sources: 1. Abbott Laboratories. Prescribing Information. *Meridia Capsules*; 2006. 2. Ioannides-Demos LL, Prioietto J, McNeill JJ. Pharmacotherapy for obesity. *Drugs*. 2005;65(10):1391-418. 3. Roche Laboratories I. Prescribing Information. *Xenecal Capsules*; 2007. 4. Li Z, Maglione M, Tu W, et al. Meta-analysis: pharmacologic treatment of obesity. *Ann Intern Med*. 2005 Apr 5;142(7):532-546

Pharmacotherapy

FDA-approved weight-loss drugs

- Indicated for patients with BMI ≥ 30 or BMI ≥ 27 with other risk factors (eg, hypertension)^{1,2}
- Two categories:
 - “Fat blocker,” eg, orlistat (Xenical®)¹
 - Inhibit intestinal enzyme that metabolizes fat
 - *Some* fat passes undigested through bowels
 - Appetite suppressants, eg, sibutramine (Meridia®)²
 - Act on hunger control centers in the brain
 - Decrease appetite by inhibiting reuptake of serotonin, norepinephrine, and dopamine

Sources: 1. Roche Laboratories. Xenical (orlistat) Capsules Prescribing Information. 2007. 2. Abbott Laboratories. Meridia (sibutramine hydrochloride monohydrate) Capsules. 2006.

Limitations of Prescription Weight-Loss Drugs

- Side Effects
 - With **Orlistat**, a “**fat blocker**,” over 20% of patients had one or more of the following side effects: flatulence with fecal discharge, fecal urgency, or **fatty, oily stools**¹
 - **Sibutramine**, an **amphetamine-like** drug, can cause psychological **dependence** and may interact with many other medications, including certain antibiotics, pain relievers, and antidepressants²
- Still...benefits may outweigh risks

Sources: 1. Roche Laboratories. Xenical (orlistat) Capsules Prescribing Information. 2007. 2. Abbott Laboratories. Meridia (sibutramine hydrochloride monohydrate) Capsules. 2006.



Typical Patient



- **Age mid-40s**
- **Female >> Male**
- **Multiple Diets (e.g. Adkins, Jenny Craig, South Beach diet, Weight-Watchers)**
 - **YO-YO frequently**
 - **Weight loss > 50 lbs frequent**
 - **Unable to maintain weight loss**
- **Depression, Anxiety, Adjustment Issues**

Co-morbidity Reduction After Bariatric Surgery



Migraines
57% resolved

Pseudotumor cerebri
96% resolved

Dyslipidemia, hypercholesterolemia
63% resolved

Non-alcoholic fatty liver disease
90% improved steatosis
37% resolution of inflammation
20% resolution of fibrosis

Metabolic syndrome
80% resolved

Type II diabetes mellitus
50-85% resolved

Polycystic ovarian syndrome
79% resolution of hirsutism
100% resolution of menstrual dysfunction

Venous stasis disease
95% resolved

Gout
72% resolved

Depression
55% resolved

Obstructive sleep apnea
74-98% resolved

Asthma
82% improved or resolved

Cardiovascular disease
82% risk reduction

Hypertension
52-92% resolved

GERD
72-98% resolved

Stress urinary incontinence
44-88% resolved

Degenerative joint disease
41-76% resolved

Quality of life improved in 95% of patients

Mortality 89% reduction in 5-year mortality

Bariatric Surgery Efficacy

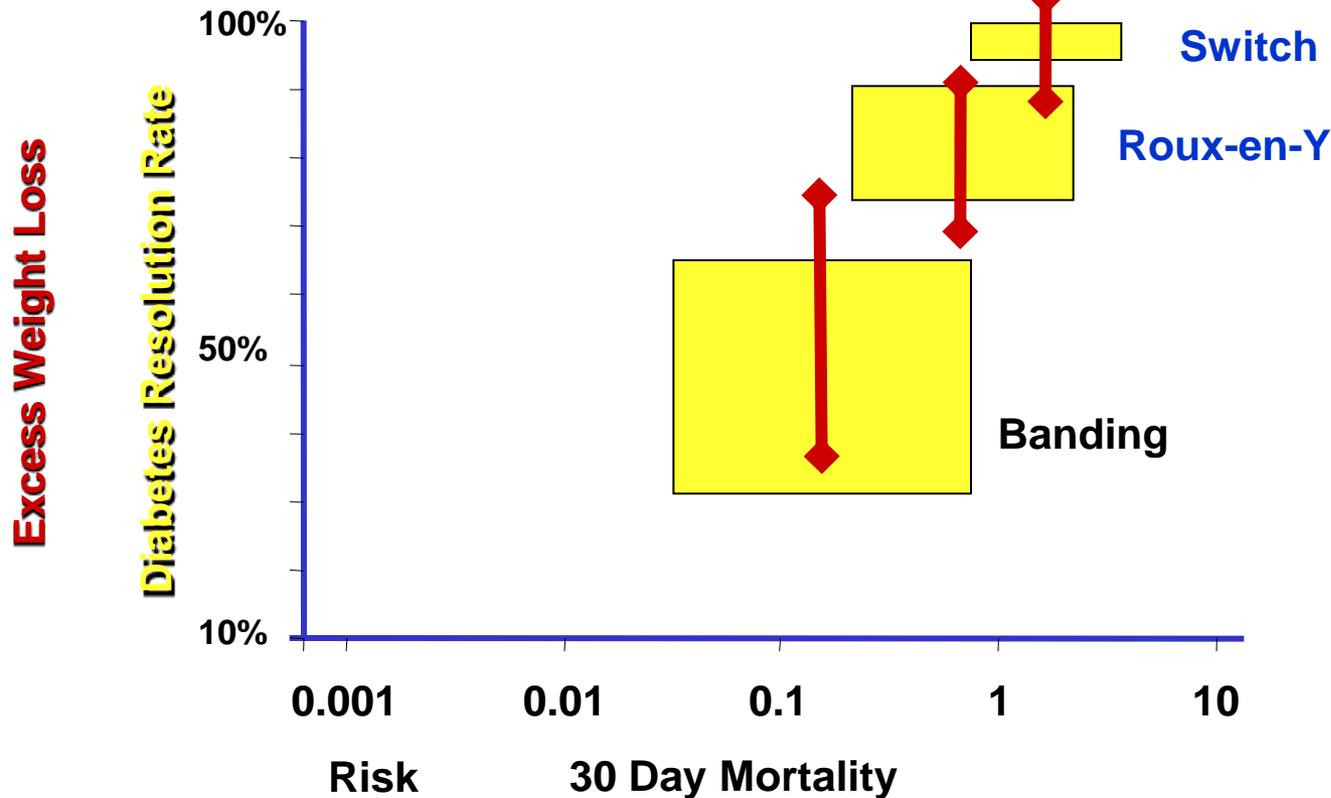
Procedure	% EWL	T2DM (Resolved)
Gastric Banding	47% (n=1848)	48%
Gastroplasty	68% (n=506)	68%
Gastric Bypass	62% (n=4204)	84%
BPD	70% (n=2480)	98%

Bariatric Surgery Efficacy: Diabetes Resolution

Author	Procedure	Resolution
Pories et al 1995	Gastric Bypass	89%
Torquati et al 2005	Gastric Bypass	74%
Schauer et al 2003	Gastric Bypass	82%
Sugerman et al 2003	Gastric Bypass	86%
Dixon et al 2003	Lap Band	64%
Gagner	Sleeve Gastrectomy	65%

Bariatric Surgery is Effective, But Not Equal

Benefit



Adapted from Buckwald H, et al, Bariatric surgery, a systematic review and meta-analysis, *JAMA*. 2004;292:1724-1737 and Maggard M, et al, Meta-Analysis: Surgical Treatment of Obesity, *Ann Intern Med*. 2005;142:547-559.



***Every 2.2 lbs
of weight loss = 9%
reduction in
diabetes!***

Jeffrey Sicat, MD

**Virginia Endocrinology
and
Osteoporosis Center**



Sleep Apnea



- **Obesity = 50%**
- **Symptoms:**
 - drowsiness
 - inattentiveness
 - impaired job performance
- **Men > women**
 - higher incidence central obesity
- **Pre-Op Eval on all patient candidates**



1991 National Institutes Health Patient Selection Criteria



- **BMI > 40**
- **BMI 35 – 40 AND co-morbidities related**
 - **Functional** limitations due to body size or **joint** disease
 - Obstructive Sleep Apnea, Hypertension, Diabetes Mellitus, impaired glucose tolerance, hyperlipidemia
- After evaluation by a Multi-Disciplinary team
 - Have **low probability** of success with **non-operative** wt-loss measure
 - Be **well informed** with long and short term risks and benefits of surgery
 - Be **highly motivated** to lose weight through surgery
 - Have an accepted operative risk
 - Be willing to undergo **lifelong** medical surveillance
 - Passed **Written Exam**



Absolute Contraindications to weight loss surgery



- Inability to tolerate general anesthesia
 - Severe non-correctable heart or lung disease
 - Severe sleep apnea
- (Cirrhosis and gastric varices)
- peptic ulcer disease - Active
 - H. pylori infection untreated
- Cancer (Active malignancy)
- HIV infection
- Expected survival < 5 years for any non-weight related condition



NCA Specific Criteria



18 y.o. <AGE < 65 y.o.

BMI: < 50 kg/m²

NO active duty

NEED a real PCM (Primary Care Manager)

-to coordinate your medical care

-optimize your health pre-operatively

PCM assistance w/ Bariatric Surgery

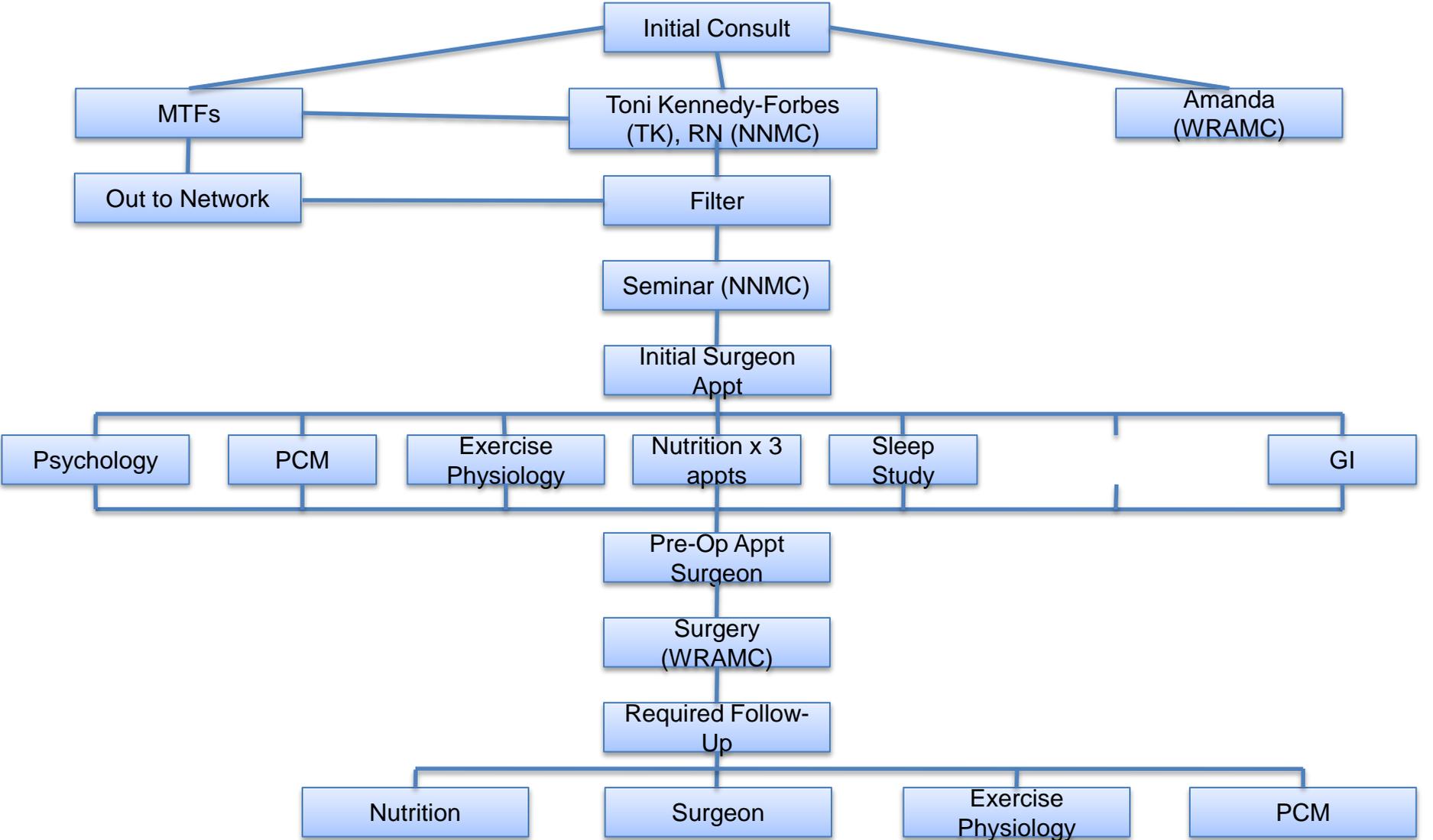
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Supplements

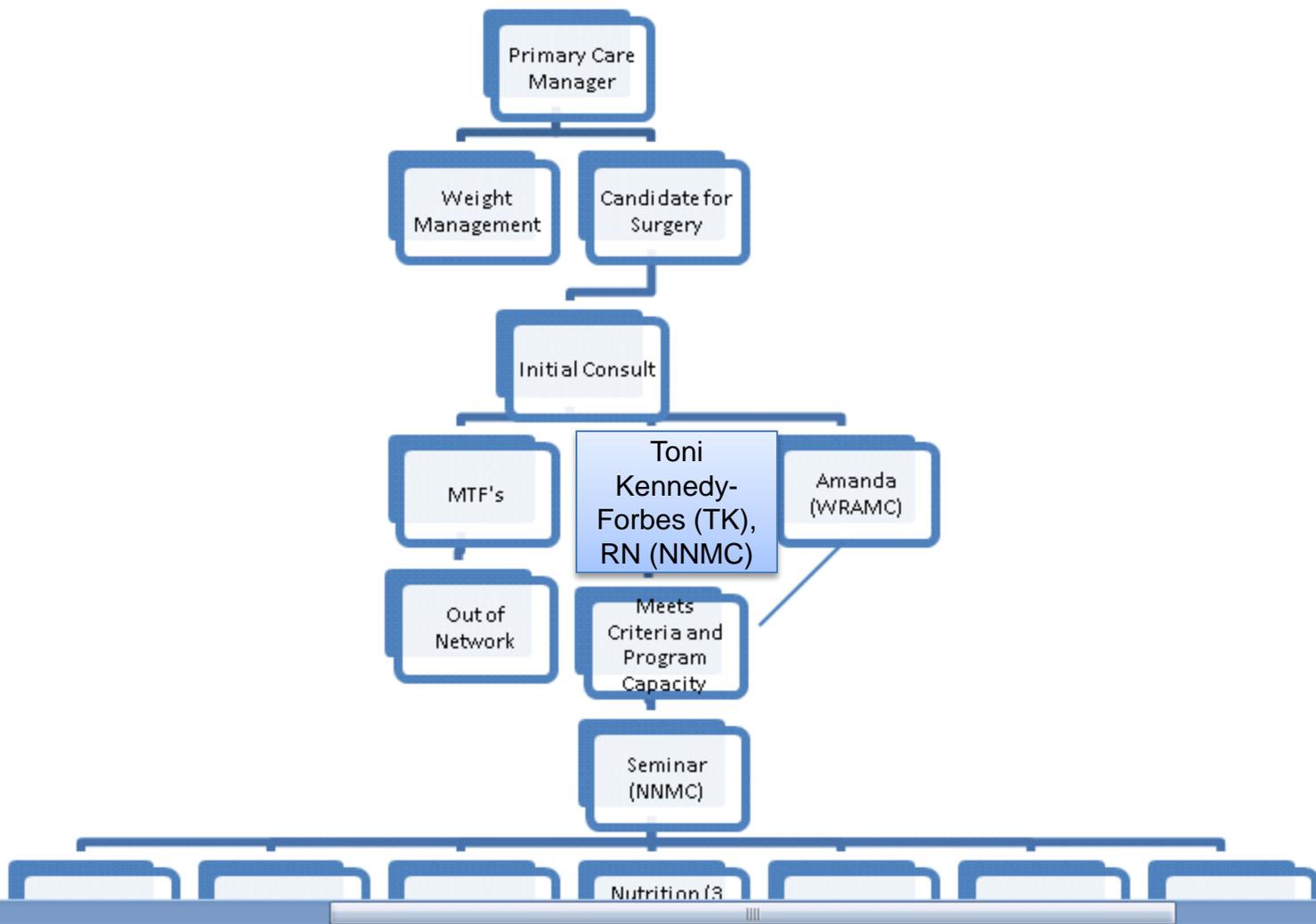
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 - Folate
 - Vit B12
- Calcium **CITRATE**
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 - Better absorbed
- Vitamin D
- **Potassium** in *liquid* form

Bariatric Consult Flow

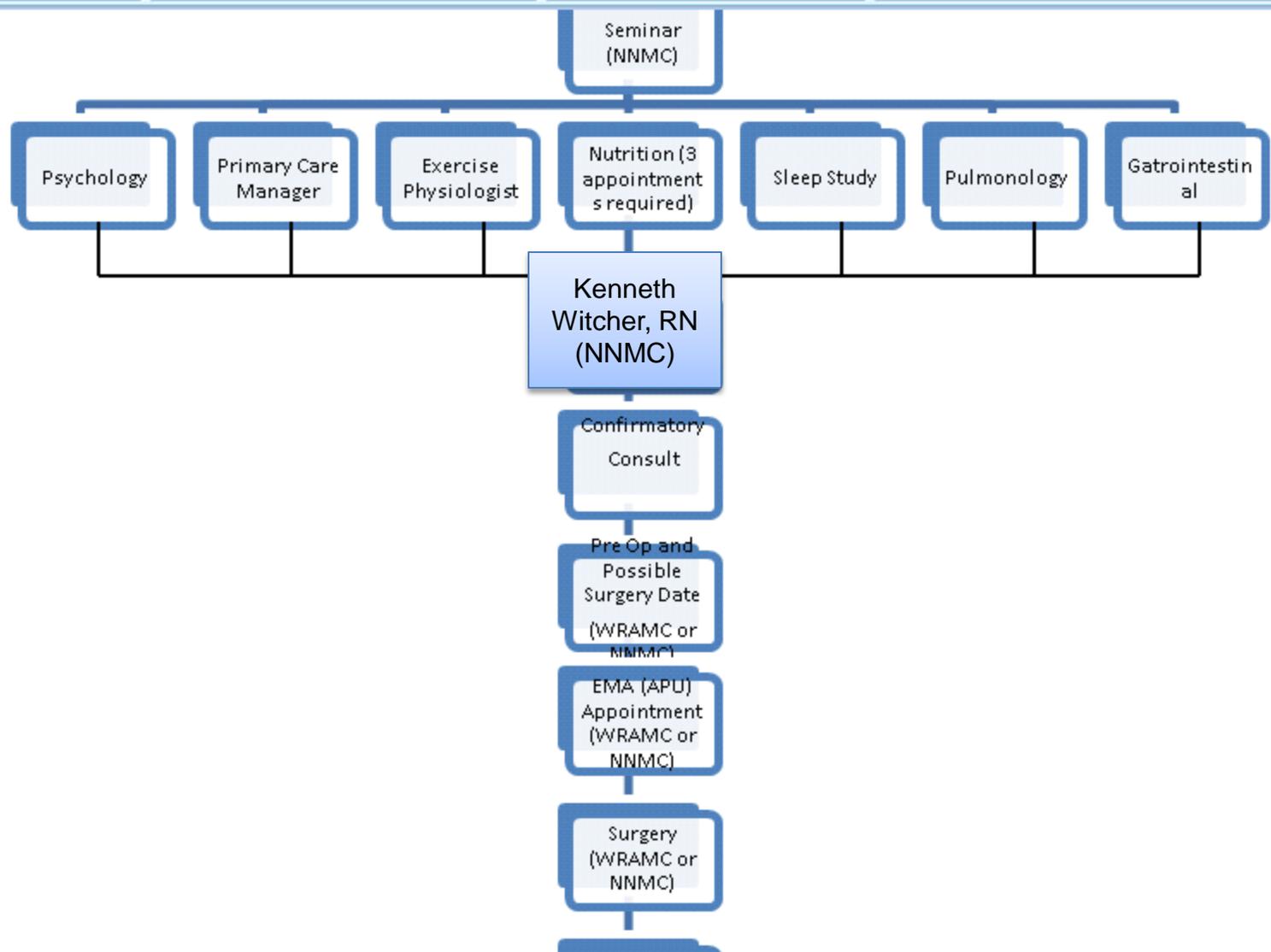
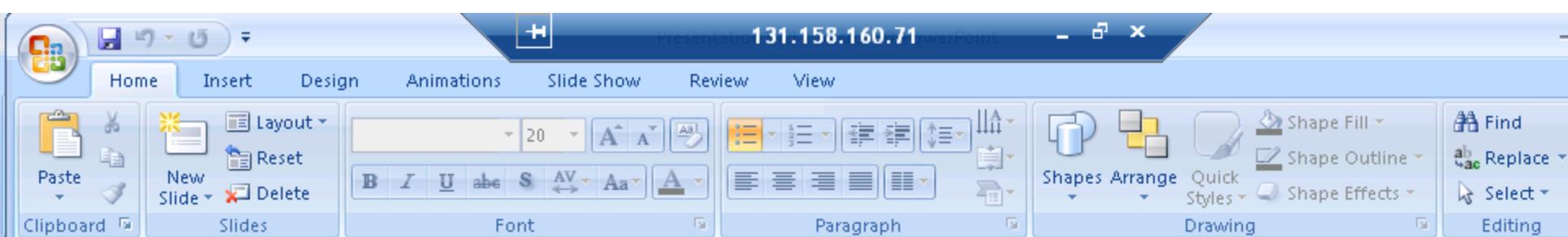


Sleeve & Bypass:
 3 months
 6 months
 9 months
 Every 6mo x 2 yrs

Band:
 Monthly



Click to add notes



Clipboard Slides Font Paragraph Drawing Editing

Paste New Slide Reset Delete

Layout Reset Delete

20 A A Aa

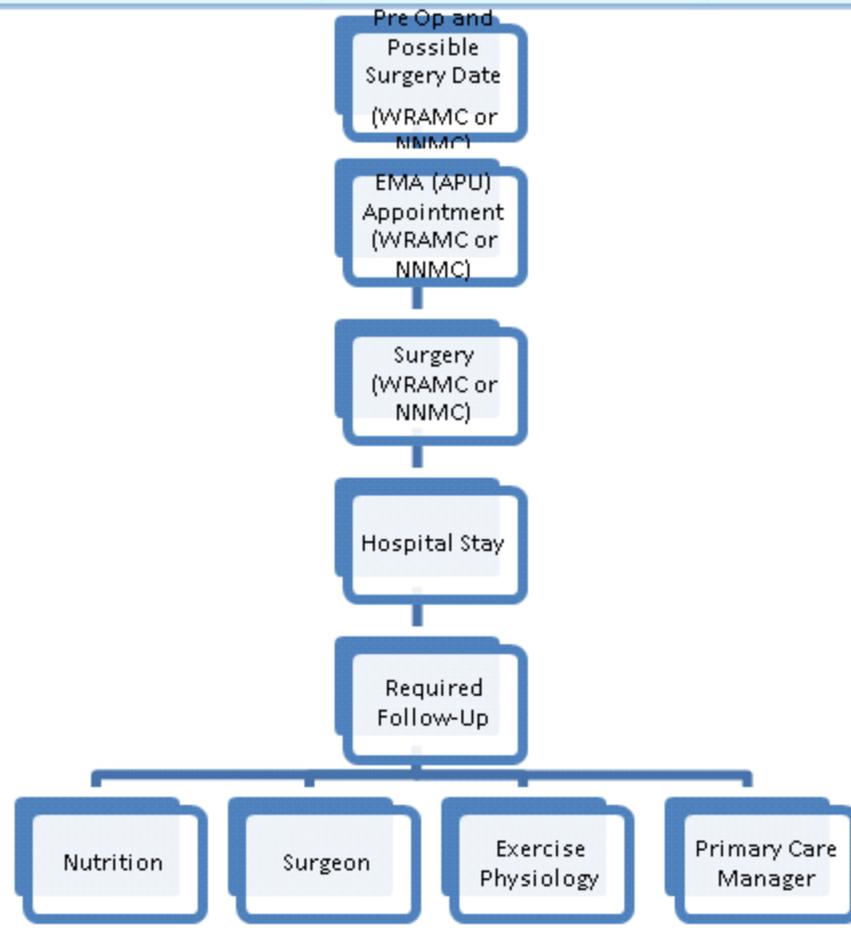
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Paragraph

Shapes Arrange Quick Styles Shape Effects

Shape Fill Shape Outline Shape Effects

Find Replace Select



Pathway to Surgery



TIME

start

3-4 weeks

3-4 weeks

3-4 weeks

3-4 weeks

4+ months

Information session

General Surgery
Clinic appt

Mental Health

Medical Nutrition

Exercise Physiology

Preop Counseling

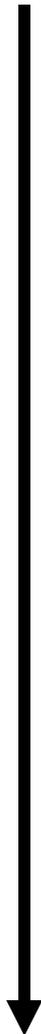
DAY of Surgery
WRAMC/NNMC

- H/P
- Risk stratification
- Medical consults
- Setup endoscopy at NNMC

May require
Additional f/u's

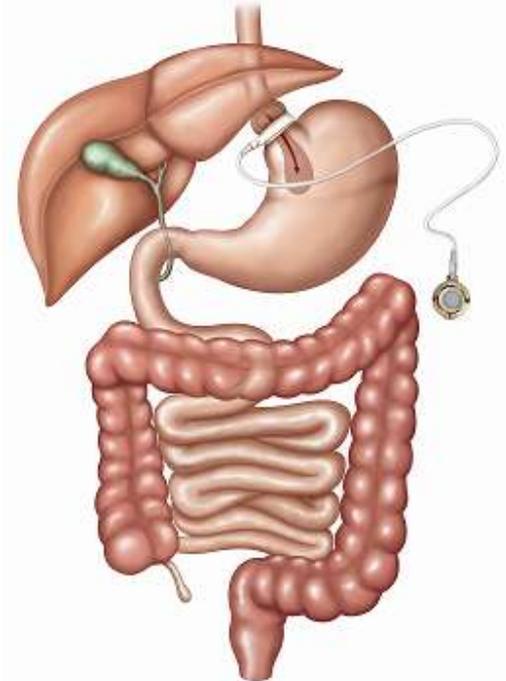
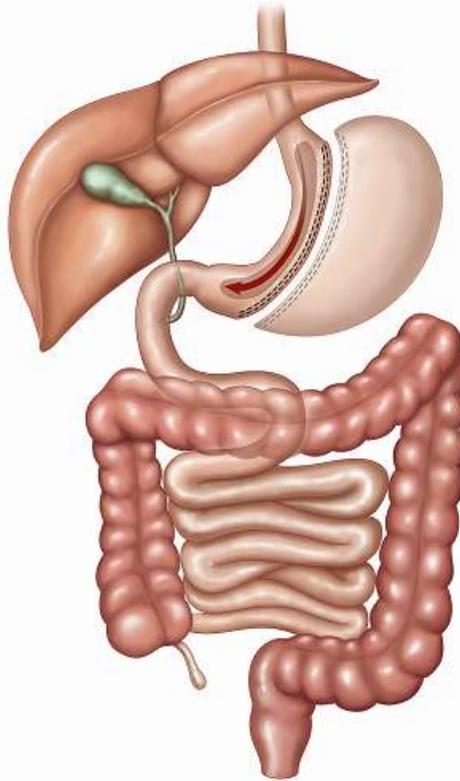
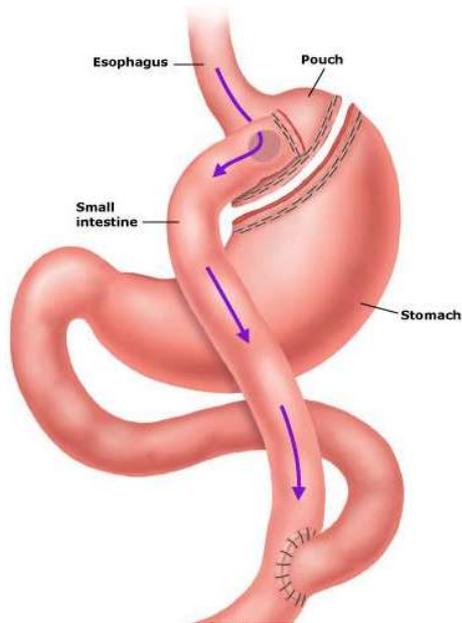
Up to 2 f/u's

- Review consults
- Agree on surgery type
- Date/time



3 Surgical Options

Roux-en-Y gastric bypass (RYGB)



RNY GBP

Sleeve

Band

EWL 2y 65-85%

40-80%

35-85%

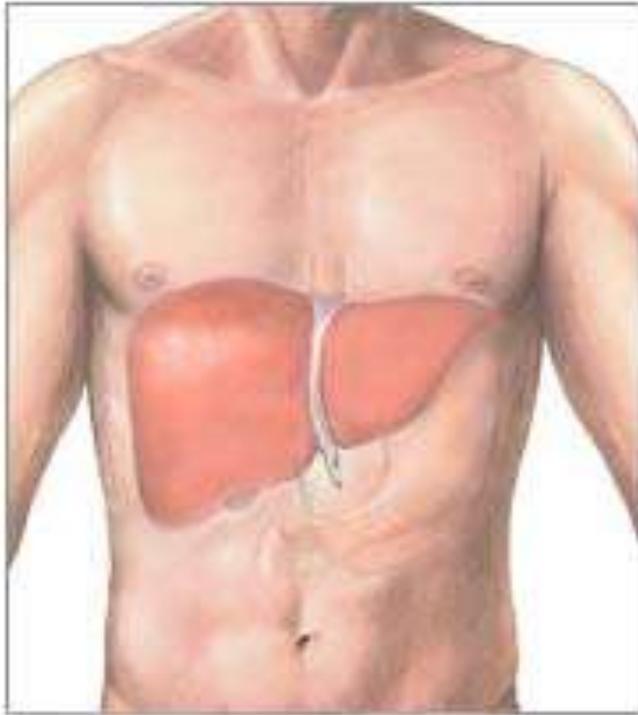
EWL 5y 65-85%

40-80%

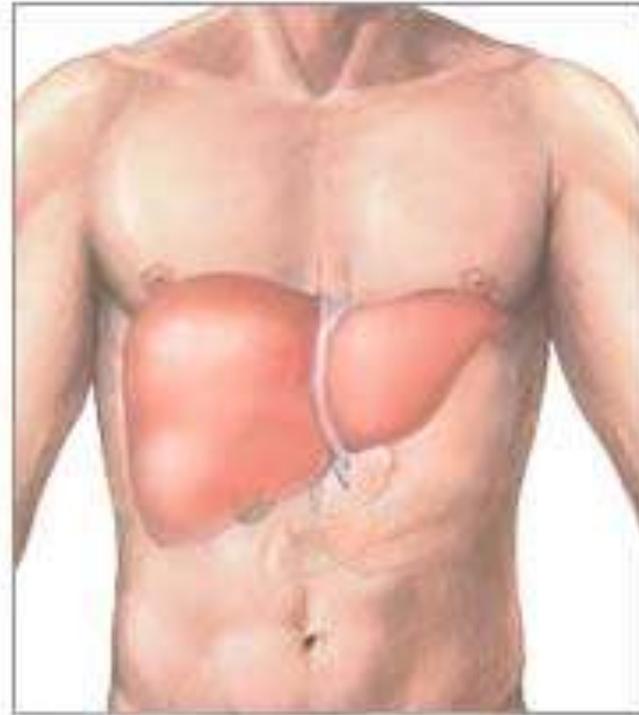
35-80%

Very Low Calorie Diet pre-operatively

Normal liver



Enlarged liver due
to hepatomegaly



	GHRELIN	GIP	GLP1/PYY
	↑ (8)	— (40)	— (40)
	? ↑ (15)	(33) ↑ / ↓ (53) *	↑↑↑ (38)
	↓↓↓ (7)	?	↑ (16)
	↓ (10)	↓↓ (37)	↑↑↑↑ (50)
	↑↑↑ (6)	↑ (53)	↓ (50)

* Conflicting data, likely due to differing lengths of jejunum excluded from nutrient exposure.

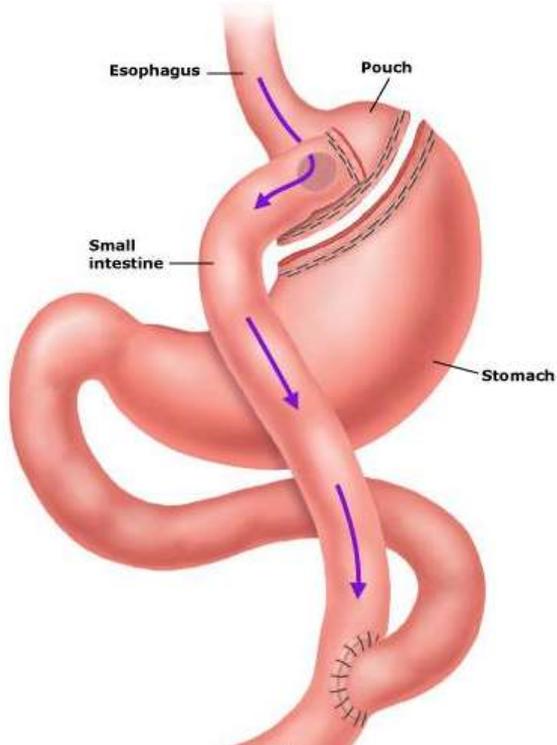
FIGURE 2. Summarizes the hormonal changes with the different bariatric surgeries.



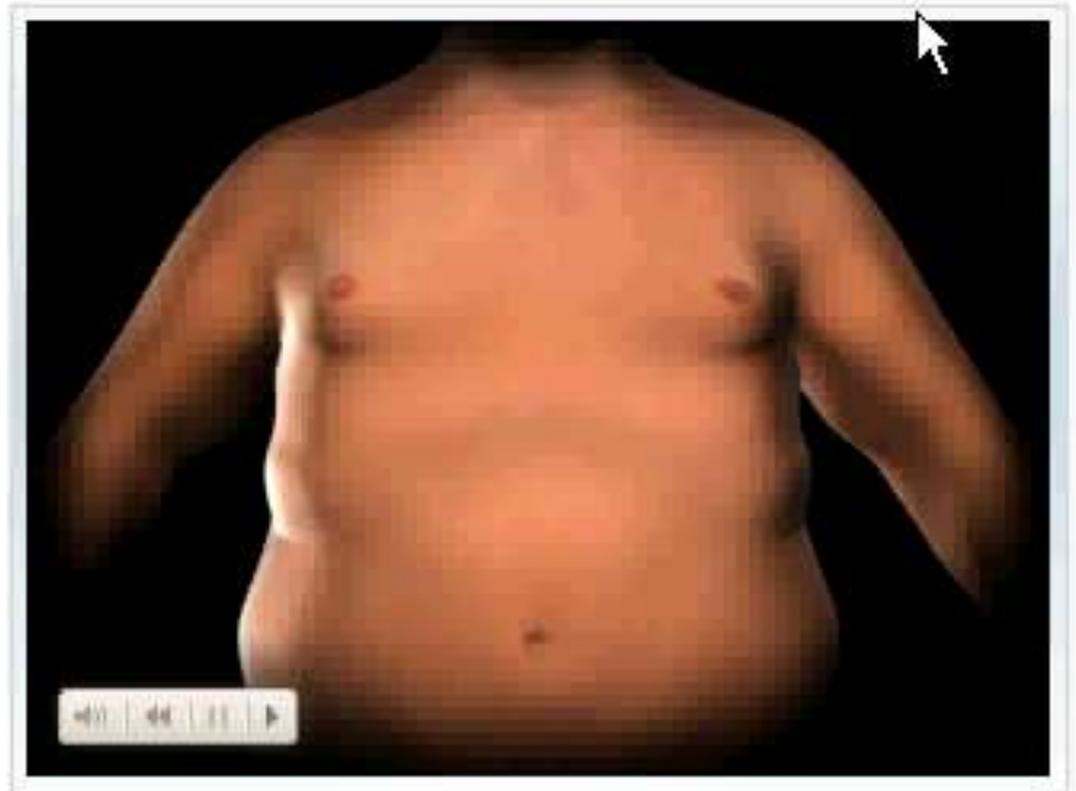
Laparoscopic Gastric Bypass



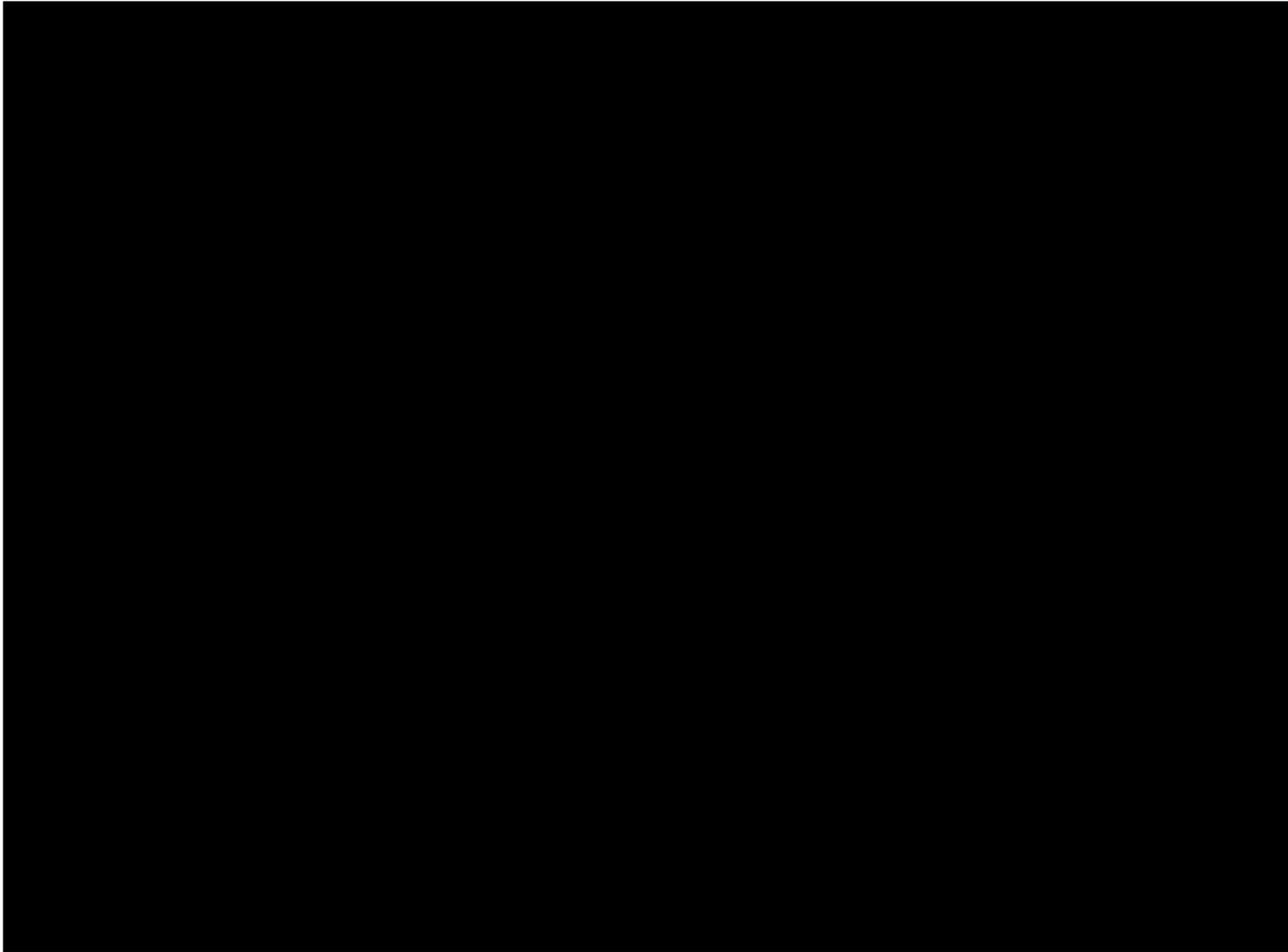
Roux-en-Y gastric bypass (RYGB)



Animation: Gastric bypass surgery

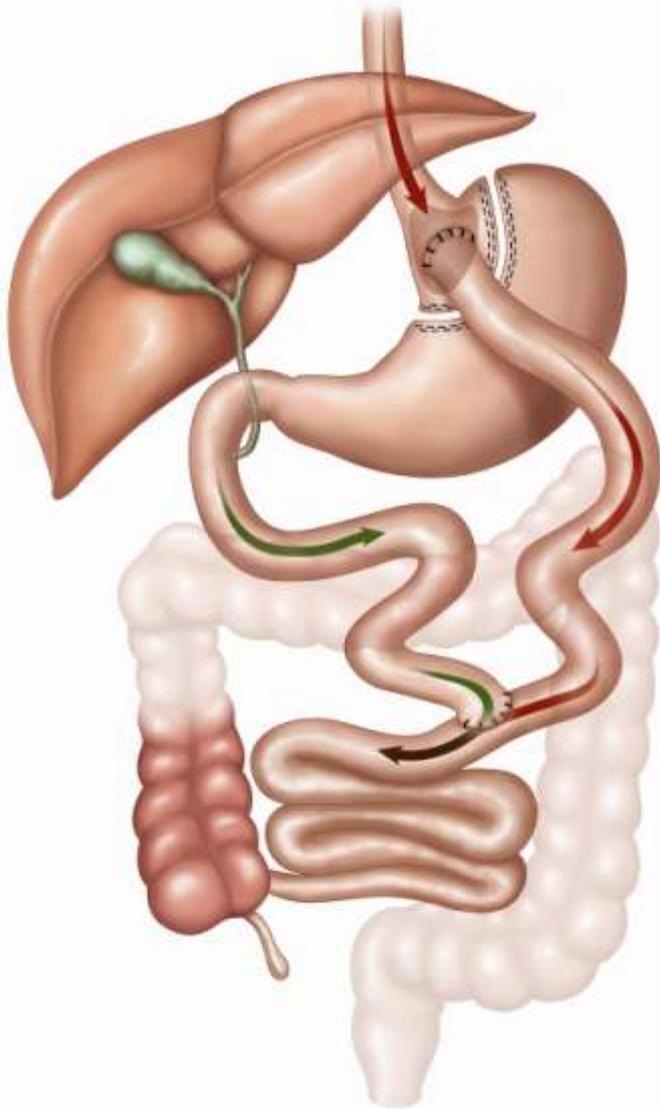


Laparoscopic Gastric Bypass



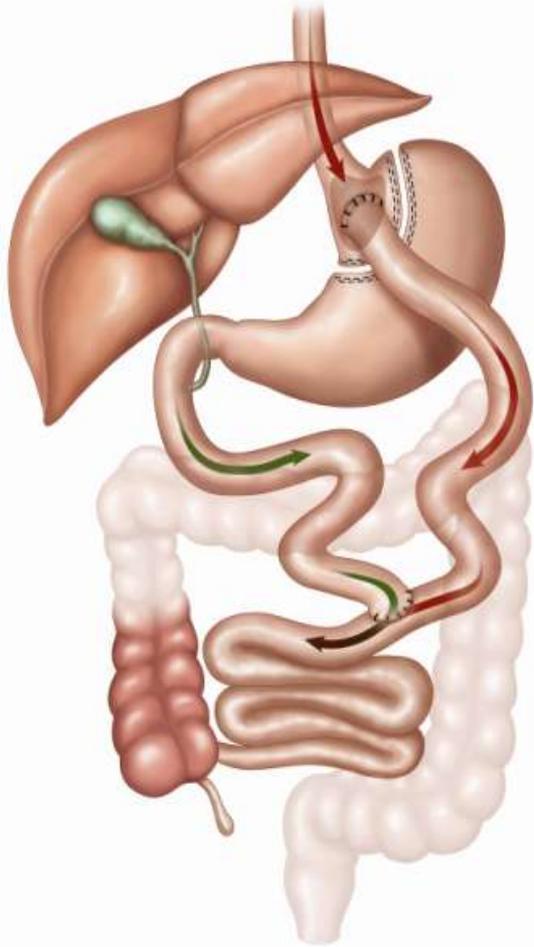
http://podcast.websurg.com/covidien/?procedure=a.%20Bariatric-Metabolic%20Surgery#video_covidienRoux_V2.mp4

Weight loss for RNY GBP



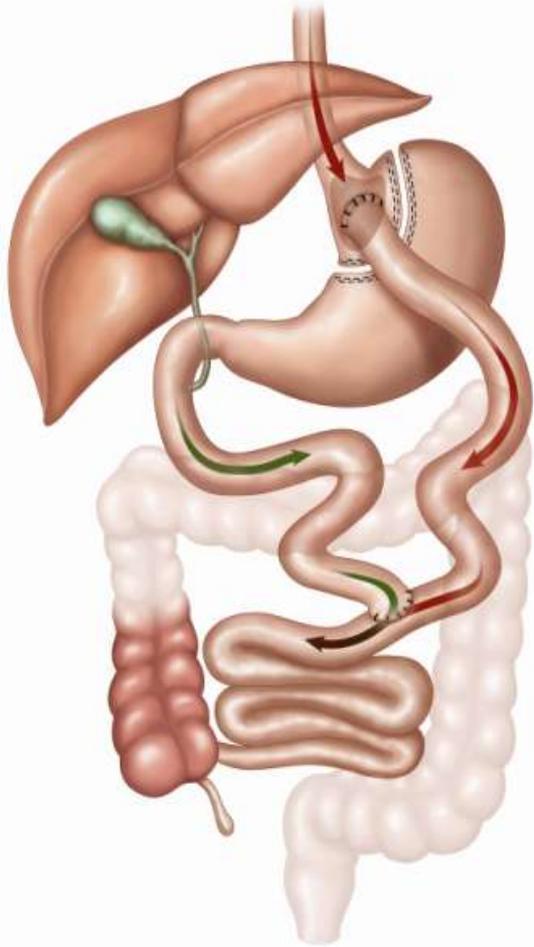
- About **100 lbs**,
 - **65%-85% EBW** (gold standard operation)
 - 35% of the BMI.
- Weight loss generally levels off
 - in 1-2 years
 - regain ≥ 20 lb common long-term
- Decreases **Gherilin**
 - (hormone that increases appetite)
 - (temporarily? For 6 mo.s)
- Increases **PYY** (appetite suppressant hormone)

Operative mortality (death) and morbidity (injury)



- Overall (**30 day**) mortality for gastric bypass when performed by skilled surgeons is about **0.5%**
- Overall Operative morbidity (eg, pulmonary emboli, anastomotic leak, bleeding, wound infection) is **5%**
 - **Leak** \leq **3%** - breakdown in the staple lines from cutting and formation of connections between intestine and stomach pouch
 - **Bleeding** \leq **4%** - this occurs at the staple lines after the stapling device cut the bowel
 - **Splenectomy** **1%**

Operative mortality (death) and morbidity (injury)

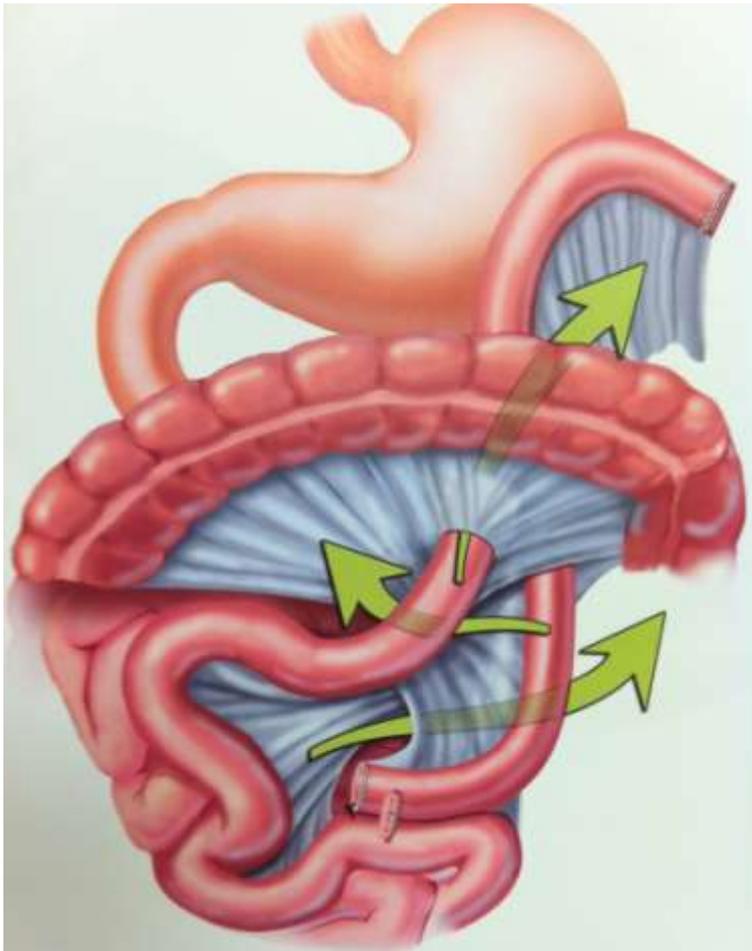


- Overall Operative morbidity (eg, pulmonary emboli, anastomotic leak, bleeding, wound infection) is **5%**
 - **VTE** \leq **2%** - but **death** from this complication accounts for **30-50%** of patient deaths due to RNY GBP
 - DVT 1-2.0%
 - PE 0.5%

Long-term Complications

Internal Hernia Sites:

- 1) Transverse mesocolic
- 2) Petersen's
- 3) Jejunum-jejunal



- internal hernias (bowel obstructions)
 - **1-10%**
 - More common in laparoscopic technique
 - Difficult to diagnose (vs. overseas PCS)
 - **high rate of reoperation** to make diagnosis
- stomal stenosis – opening to gastric pouch becomes too tight
 - **3-12%**
 - Treatment: balloon dilatation via endoscope
- marginal ulcers – ulcers downstream from new connection to stomach pouch
 - **1-16%**
 - Alcohol and cigarette smoking are major risk factor
 - NSAIDS contraindicated in bypass pts

Long term complications

Nutritional Deficiencies

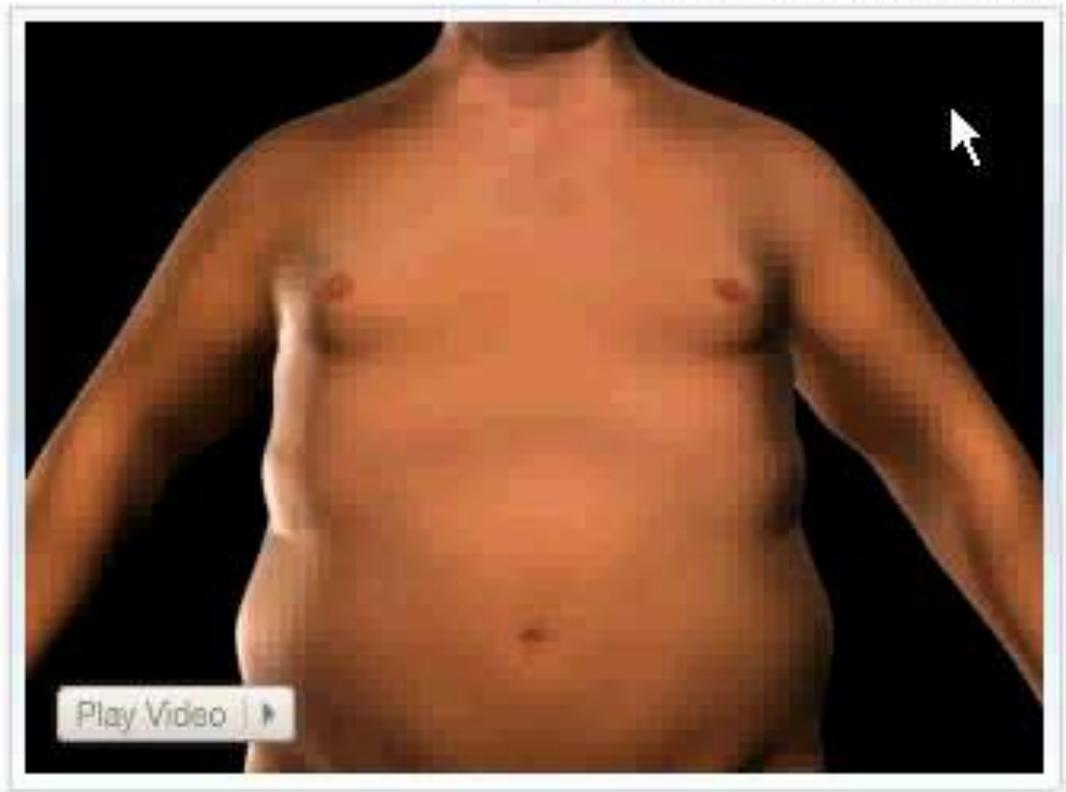
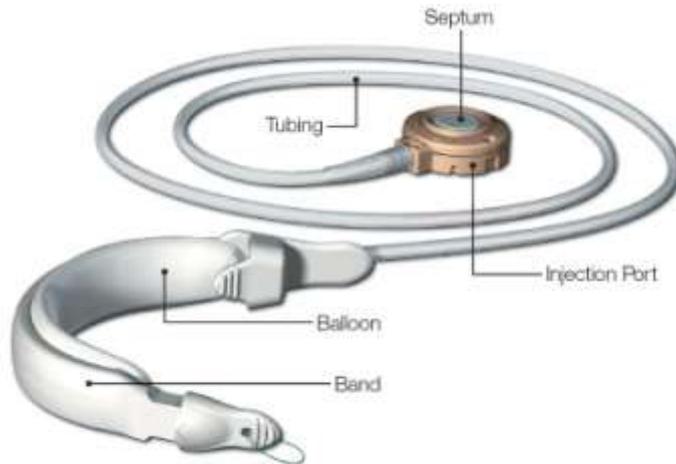
- Permanent mineral and vitamin supplement for the rest of natural life!!
- Anemias -if not on supplements
- Non-reversible neurologic diseases: paralysis
- **vitamin B12** (specifically, cobalamin)
- **iron**
- **folate**
- **calcium**



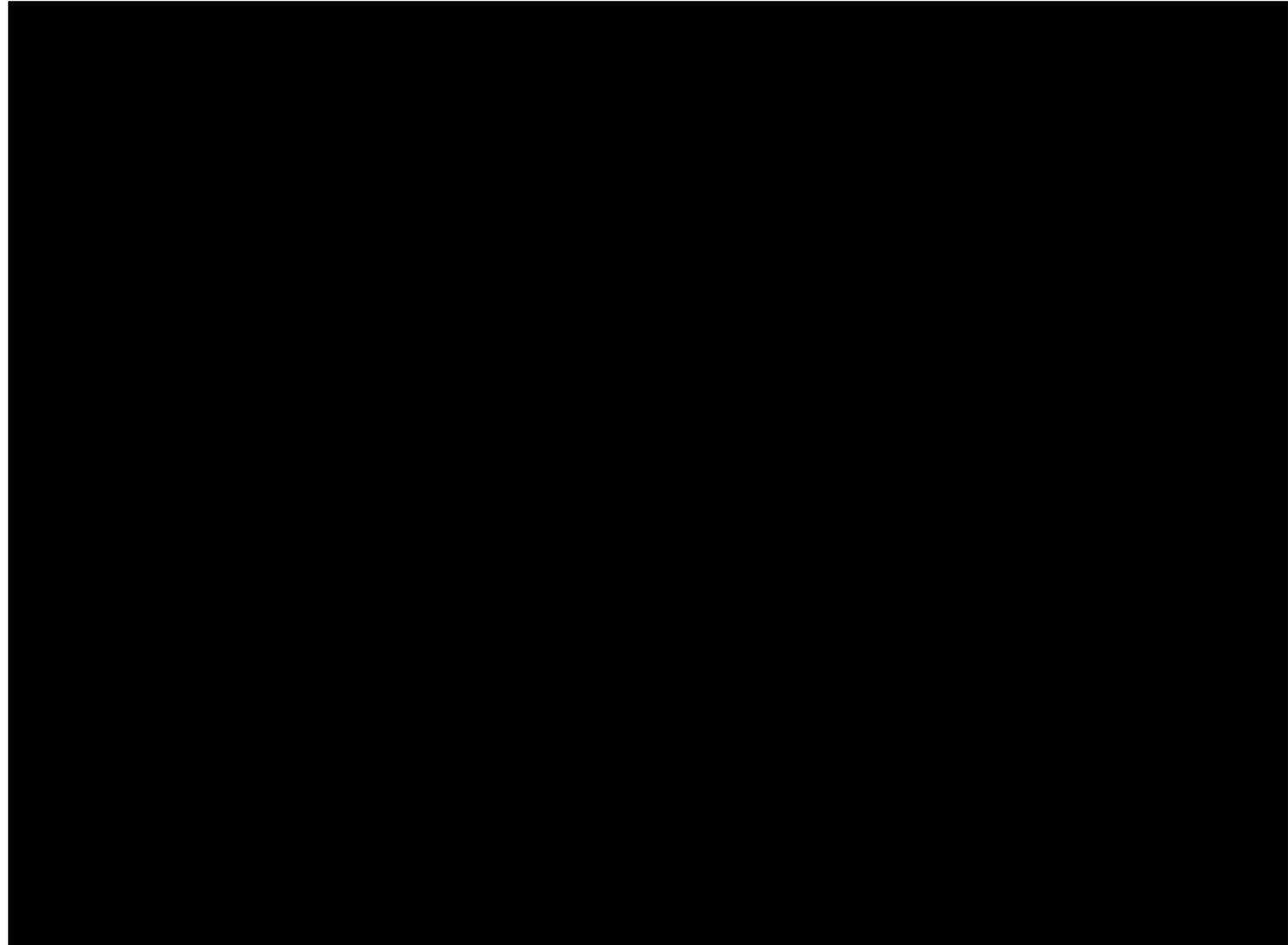
Laparoscopic Gastric Adjustable Banding



Animation: Gastric Band Surgery



Laparoscopic Banding



<http://podcast.websurg.com/covidien/?procedure=a.%20Bariatric-Metabolic%20Surgery>

Gastric Banding Contraindications

Situations where the risks are greater than the benefits that would be gained from surgery are contraindications. These include:

- Inflammation of the digestive tract, including
 - ulcers,
 - severe esophagitis,
 - Crohn's disease
- Severe heart or lung disease
- Upper digestive tract bleeding conditions due to enlarged or fragile veins
 - Portal hypertension
 - Cirrhosis of the liver
- Abnormal digestive tract anatomy
- Chronic pancreatitis

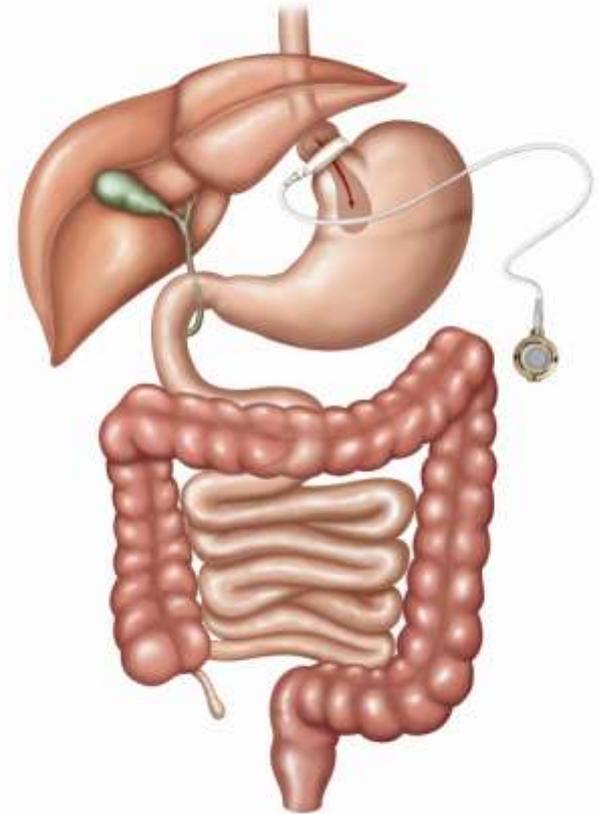
Gastric Banding Contraindications – con't.

- Infection of any type, anywhere in your body
- Known allergies to the implant materials
- Using steroids for a long period of time or within 15 days of surgery
- Currently pregnant
- Age <18 years of age
- Unwilling to make significant changes in eating and behavior patterns LIFE-LONG
 - Monthly follow-ups for 1st year
 - Every 2-3 months 2nd year
 - Annually thereafter
- Conditions or behaviors that would make it difficult to appropriately follow directions

Risks Associated with Gastric Banding

- Migration of implant
 - band erosion,
 - band slippage (4%)
 - port displacement (flip)
- Tubing-related complications
 - port disconnection,
 - tubing kinking
- Band leak
- Esophageal spasm
- Gastroesophageal reflux disease (**GERD**)
 - -> thus **hiatal hernia repair** required
- Inflammation of the esophagus or stomach
- Port-site infection

Note: Complications may result in re-operations. These complications are not usually life-threatening.



Weight Loss at Three Years

U.S. Clinical Study Results Overview

%EWL At Three Years	Number of Patients	Percent of Patients
Gained weight	5	2%
0% to 5%	6	3%
5% to 25%	41	18%
25% to 33%	33	14%
33% to 50%	63	28%
50% to 75%	56	25%
75% to 100%	24	10%
Total:	228	100%

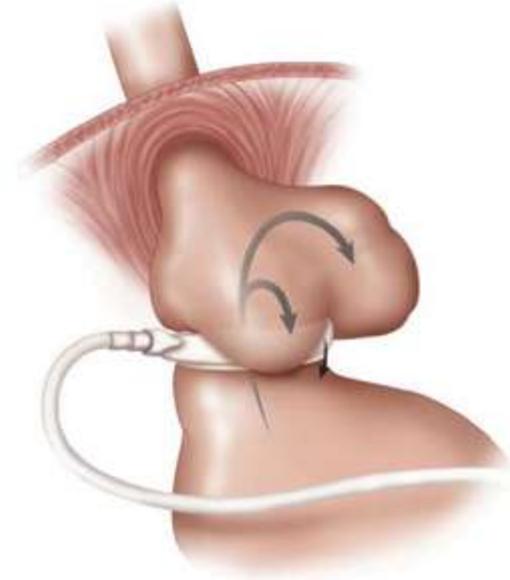
Late Complications

- **late slippage/
migration**

- **4.0% / 6.2%**
- from overeating
pouch?

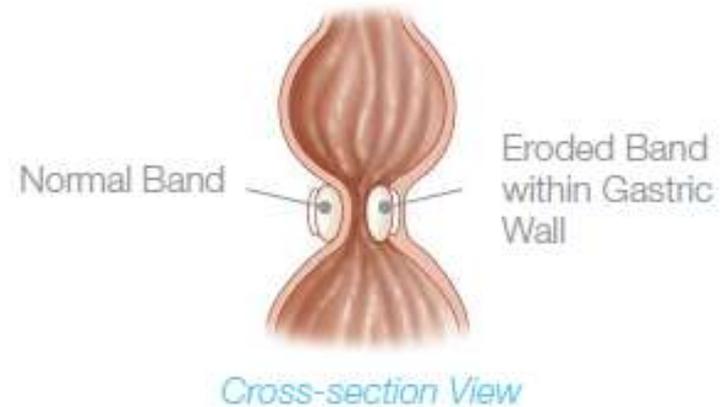
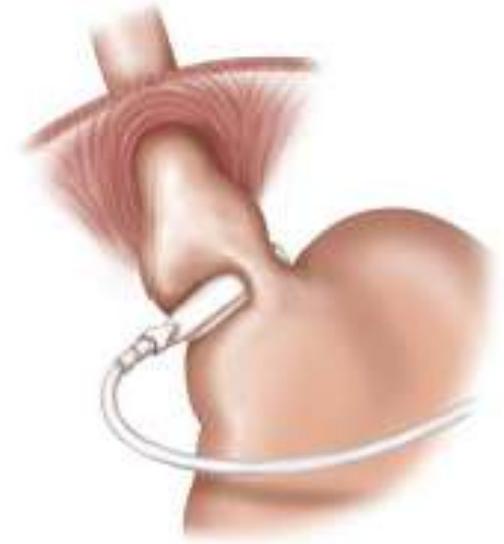
- **pouch dilatation**

- **1.7% - 5.1%**
- from overeating
pouch?



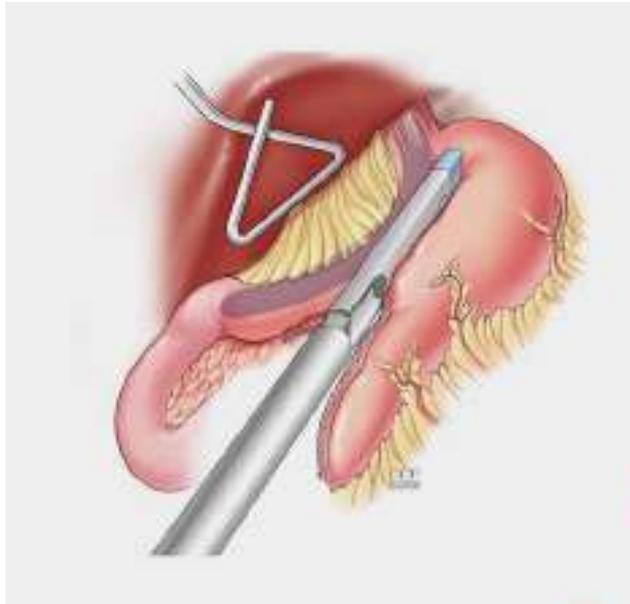
Gastric Band Erosion

- (0.9-5.6%)
- Requires removal (endoscopically)
- May be related to intra-operative injury

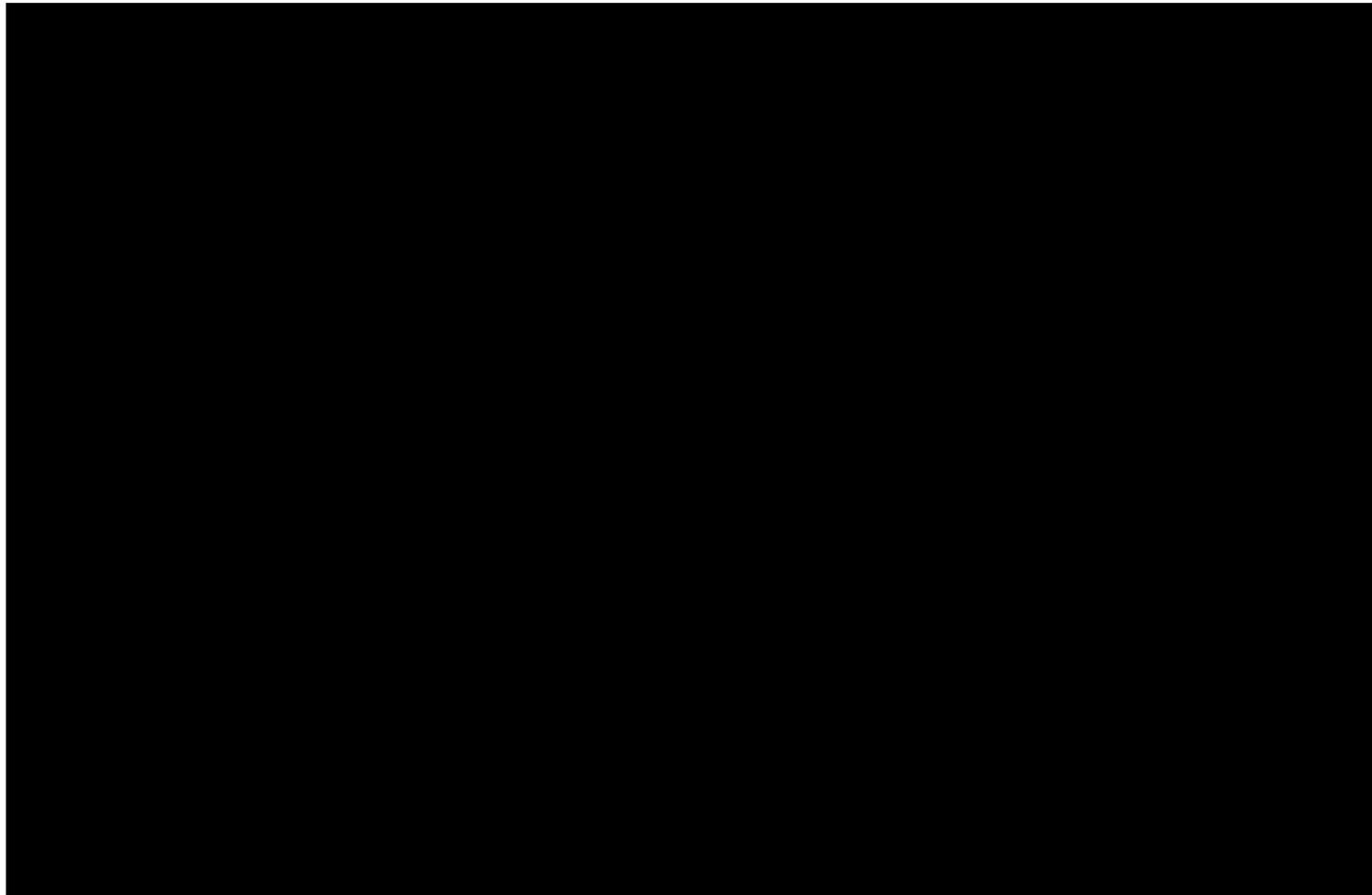




Laparoscopic Sleeve Gastrectomy



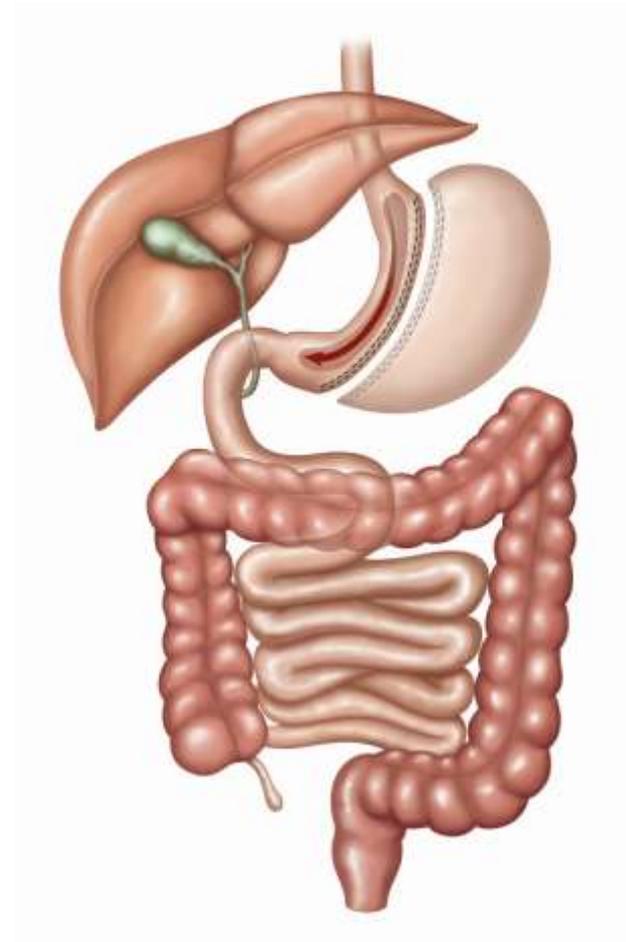
Laparoscopic Sleeve Gastrectomy



<http://podcast.websurg.com/covidien/?procedure=a.%20Bariatric-Metabolic%20Surgery>

Lap Sleeve Gastrectomy

- 36-40 Fr Bougie
- Long Staple Line
 - (leak risk)
- convert to RNY if anatomy difficult
- Decreases **Gherilin** (hormone that increases appetite)
- Increases **pyy 3-36**: (*appetite suppressant*)
- OK for NSAIDs
- DM resolution
 - (off meds) 82%
- Pulmonary Embolus



“Risk”



DEATH

0.1 %

0.39%

0.5 %

MORBIDITY

5.0-40.0%

2.9%

5.0 %

**LAP
BAND**

**LAP
GASTRIC
SLEEVE**

**LAP
GASTRIC
BYPASS**

%EWL



Effectiveness

50 %

60 %

70 %

OR time
(avg) 1 hr

2.5 hr

4 hr

Hosp Days
(avg) 1 day

2-3 days

3 days

“Risk”



DEATH

0.1 %

0.39%

0.5 %

MORBIDITY

5.0-40.0%

2.9%

5.0 %

**LAP
BAND**

**LAP
GASTRIC
SLEEVE**

**LAP
GASTRIC
BYPASS**

%EWL



Effectiveness

50 %

60 %

70 %

7 days

30 days

30 days

**CON
LEAVE**

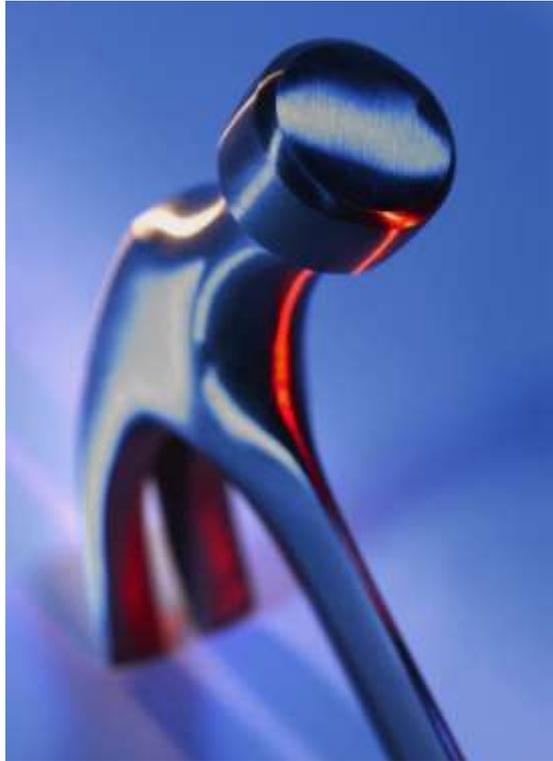
**Ready for
desk work**

3 days

7 days

7 days

Summary



Surgery NOT for everyone

- **Surgery is a TOOL, *not* a solution!**
- **Surgery is NOT the easy way out**
 - **Much work goes with surgery:**
 - **Permanent Changes**
 - » to **EATING HABITS**
 - **Permanent Exercise Habits**
 - **Evaluation for Center of Excellence**

Thank You!

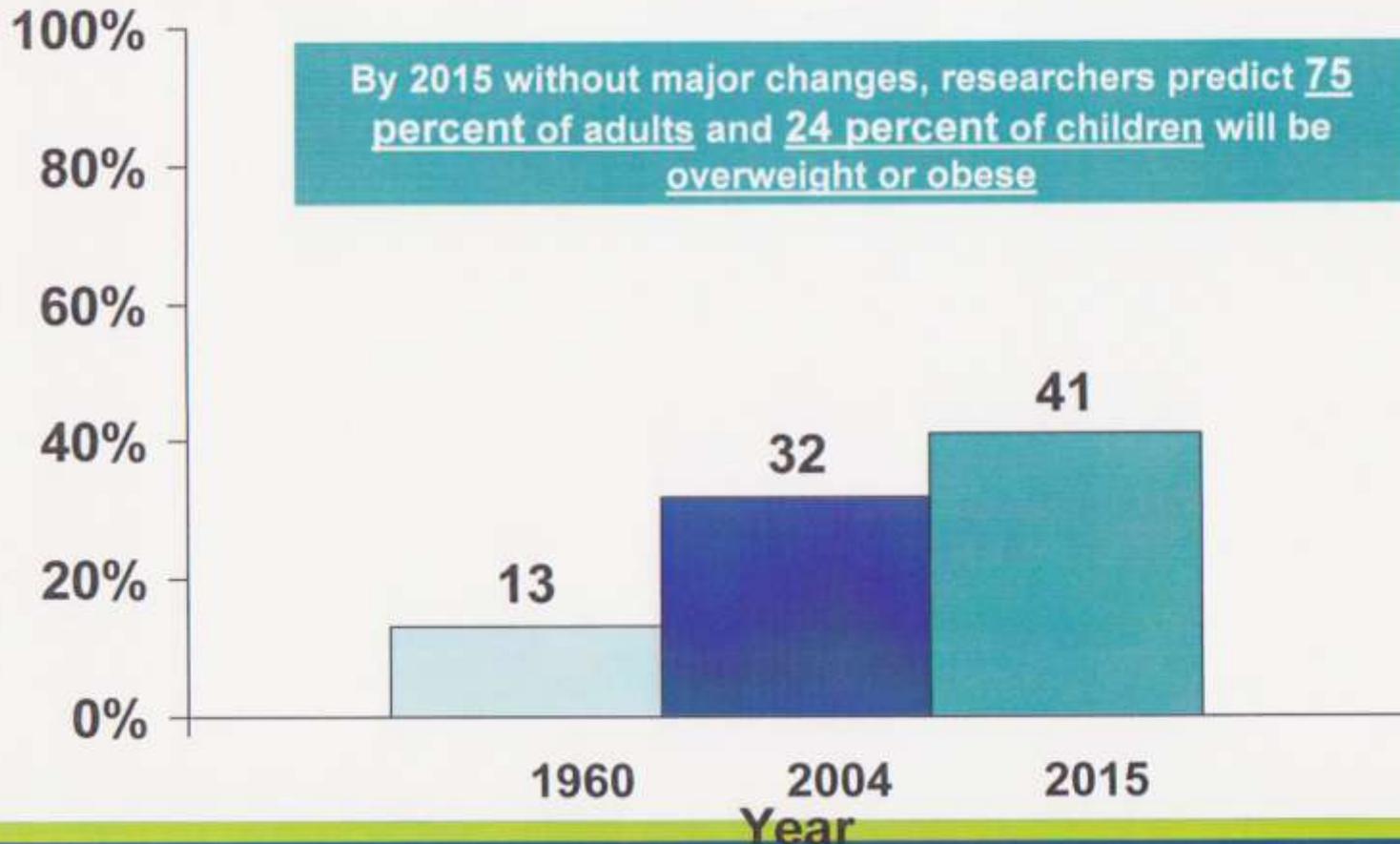


Table 17-1 -- Results of the Three Major Bariatric Procedures

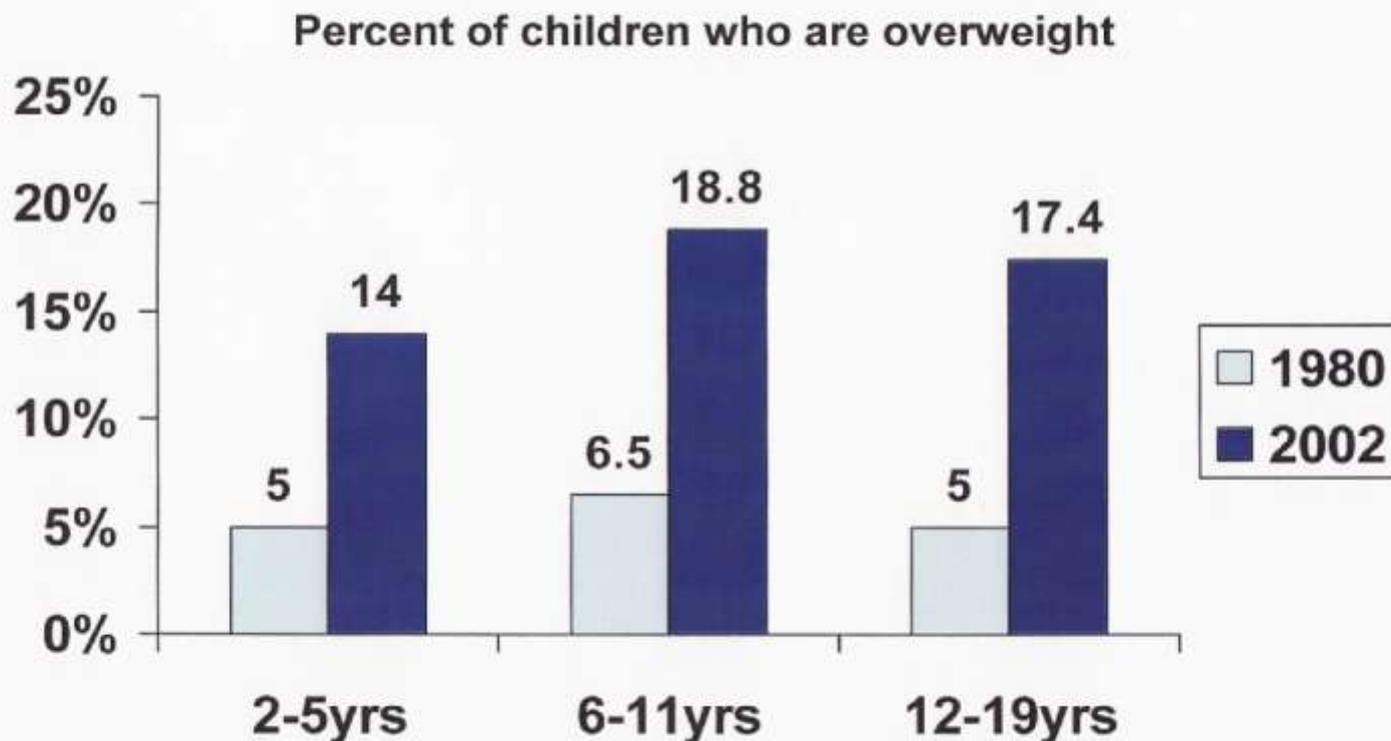
PARAMETER	BUCHWALD [25]	MAGGARD [26]
AGB weight loss (kg)	39.7 (42.2-37.2)	34.8 (29.5-40.1)
AGB EWL (%)	61.2 (64.4-58.1)	
AGB mortality	0.1% (2297 patients)	0.02% (9222) patients)
RYGB weight loss (kg)	43.5 (48.1-38.8)	41.5 (37.4-45.6)
RYGB EWL (%)	61.6 (66.5-56.7)	
RYGB mortality	0.5% (5644 patients)	0.3% (11,290 patients)
BPD/DS weight loss (kg)	46.4 (51.6-41.2)	53.1 (47.4-58.8)
BPD/DS EWL (%)	70.1 (73.9-66.3)	
BPD/DS mortality	1.1% (3030 patients)	0.9% (2808 patients)

The rate of obesity is also expected to increase, and contribute to rising rates of chronic diseases

By 2015, it is predicted that 41 percent of Americans will be obese

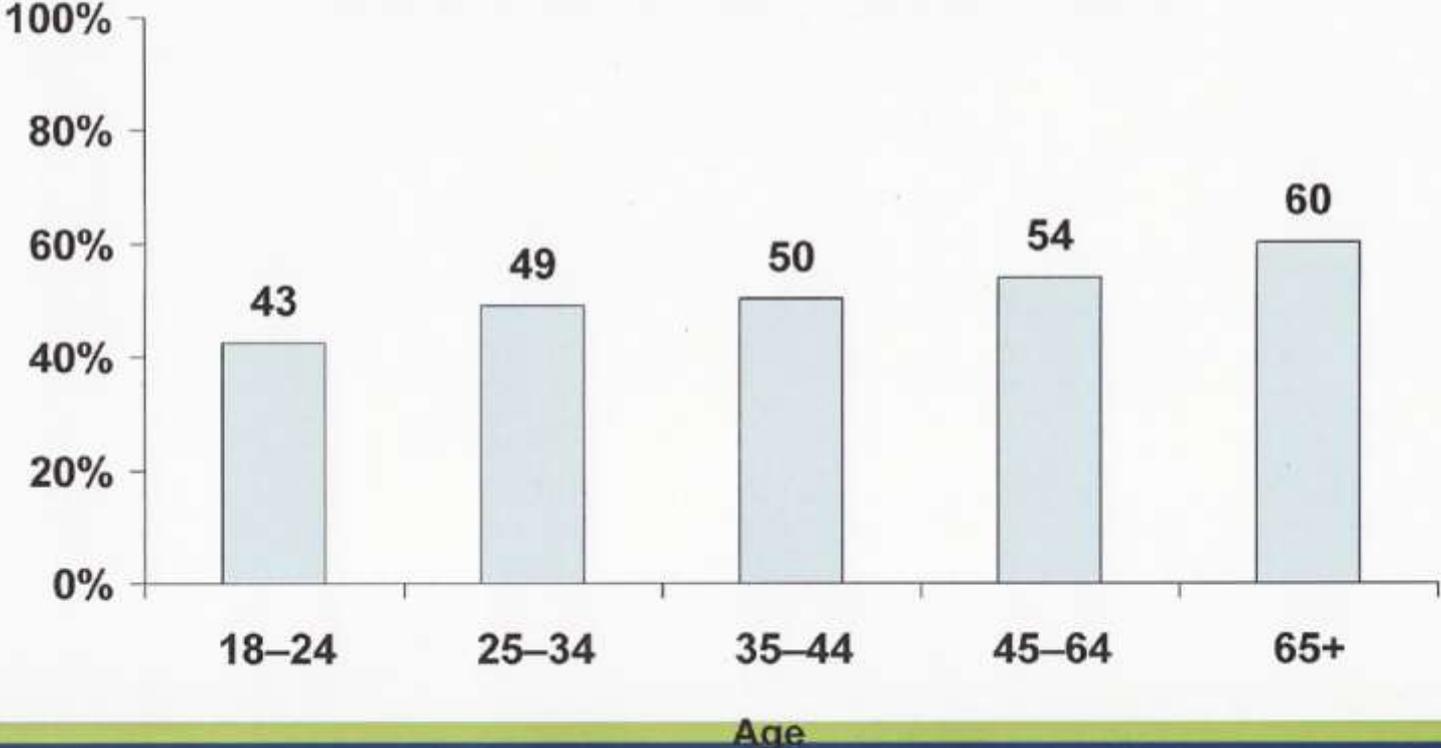


The share of children who are overweight has more than doubled in the U.S. over the past two decades



Many Americans are not getting enough physical activity, a key risk factor for chronic diseases and obesity

Percent of U.S. adults who do NOT get the recommended amount of physical activity



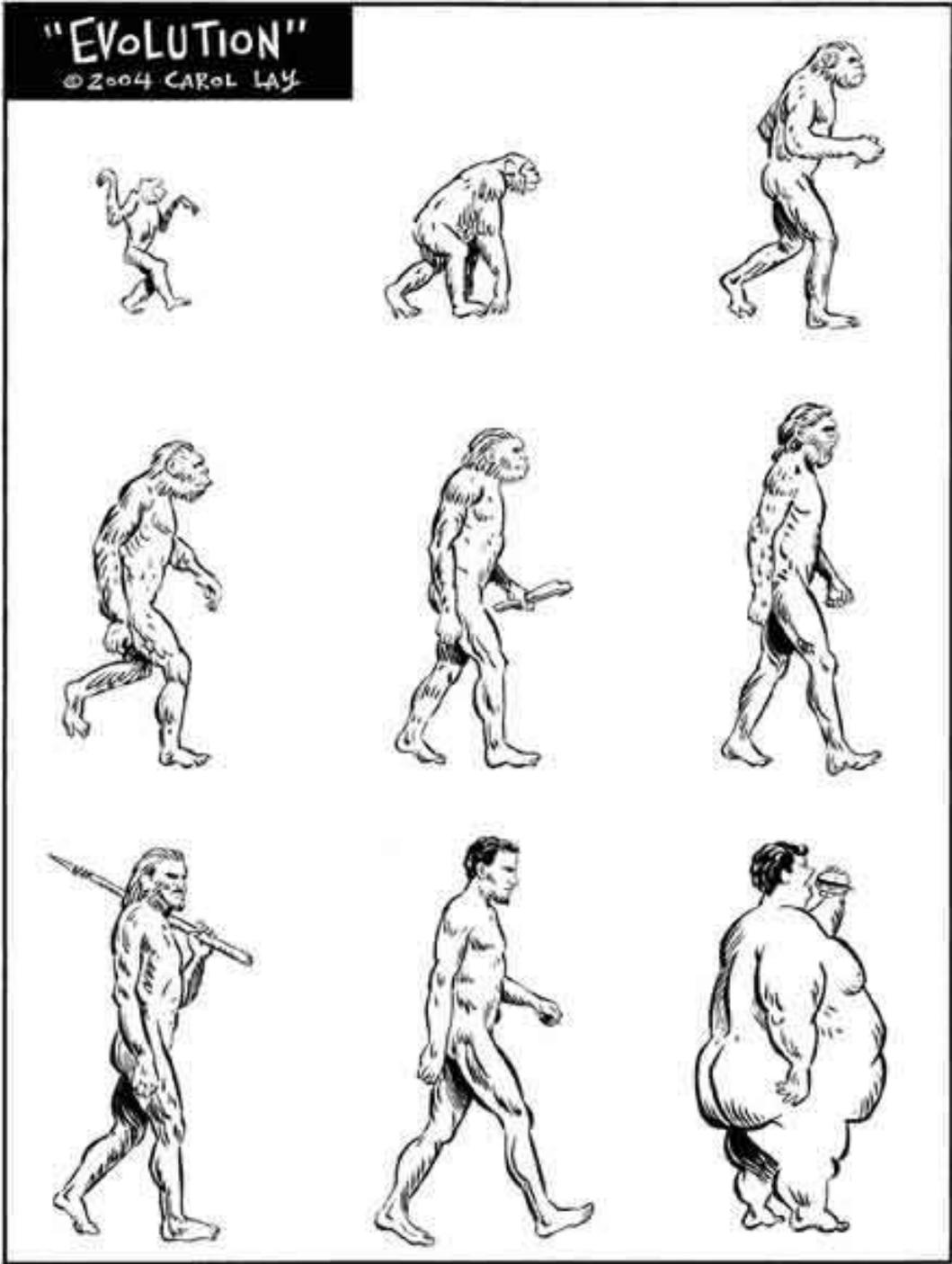
Source: Centers for Disease Control and Prevention, Prevalence of Regular Physical Activity Among Adults — United States, 2001 and 2005. Accessed at <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5410a0101a.htm>





"EVOLUTION"

© 2004 CAROL LAY





Welcome!

Results

3yrs SAGB/LB

- excess weight loss **56%/ 50%**
- resolution diabetes **61%/ 60%**
- hypertension **62%/ 44%**

- *Adverse event (AE) rates appeared comparable*
- mortality was equivalent **0.1%**

