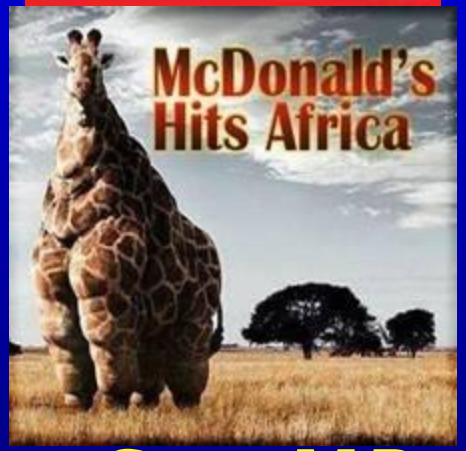
CAUSE AND TREATMENT OF OBESITY

THE PALM BEACH PEDIATRIC SOCIETY



Robert Cywes M.D., Ph.D.

Palm Beach Children's Hospital

www.obesityresolved.com; obesity resolved

robert@jaxchildren.com (904) 412-3134

DISCLAIMER

Robert Cywes M.D., Ph.D.
Pediatric Surgeon

Multidisciplinary obesity management program suited to community practice

Childhood, Adolescent and Adult surgical obesity treatment program

Consultant and Proctor for Apollo Endosurgery (was Allergan, Inc.)
Consultant Olympus

Patients gave signed permission for use of photographs

OBJECTIVES

1. What makes us fat - Understand the Pathophysiology of Obesity
2. Who becomes fat - Recognize the Vulnerable Population
3. Why now – Epidemiology of the Obesity Epidemic

Consensus on cause results in consensus on therapy

4. Fixing fat - Therapeutic Strategies: ME
5. Fixing fat - Preventative Strategies: YOU

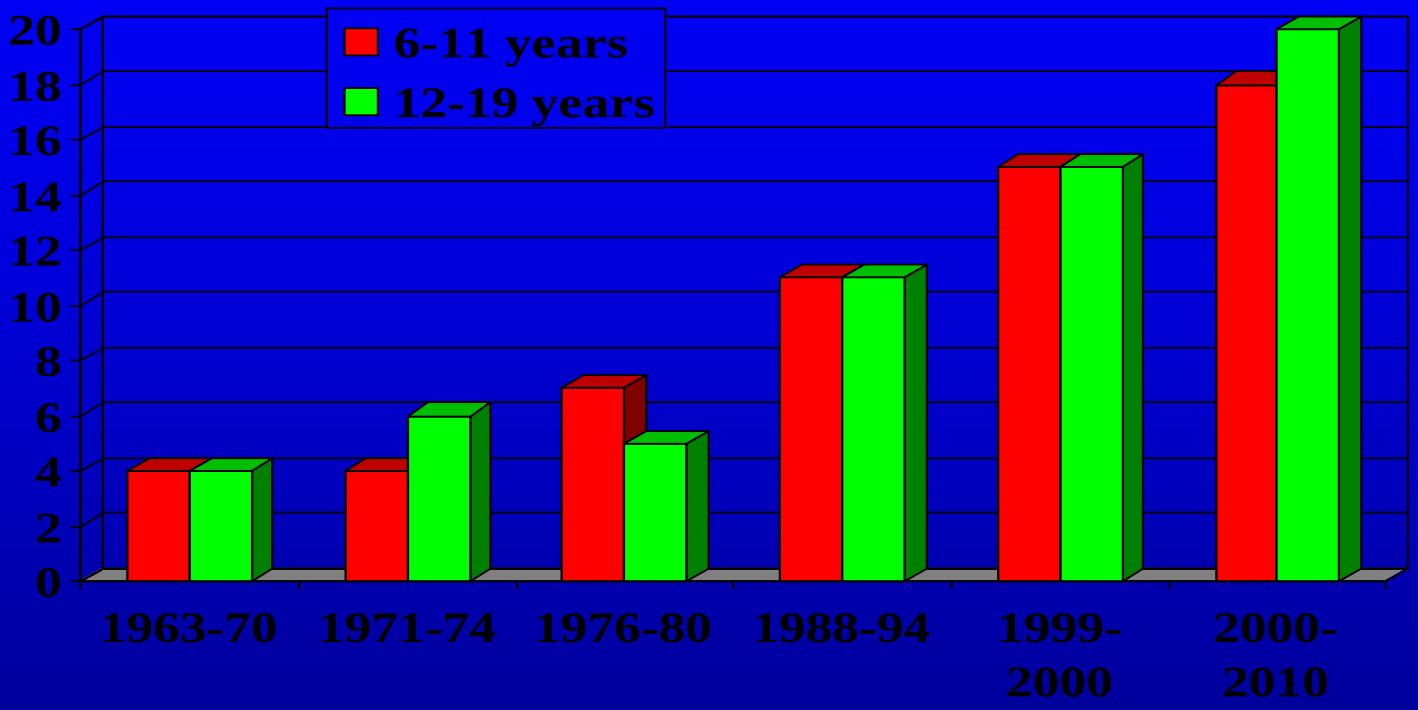
MOM - YOUR CHILD IS FAT, LET'S FOCUS ON THAT

Measuring our Obesity

NY TIMES - JUNE 16, 2013: "The American Medical Association has officially recognized obesity as a disease, a move that could induce physicians to pay more attention to the condition and spur more insurers to pay for treatments."

On June 16, 2013, Obesity became the commonest serious chronic disease in America

The prevalence of Overweight Children and Adolescents (US)

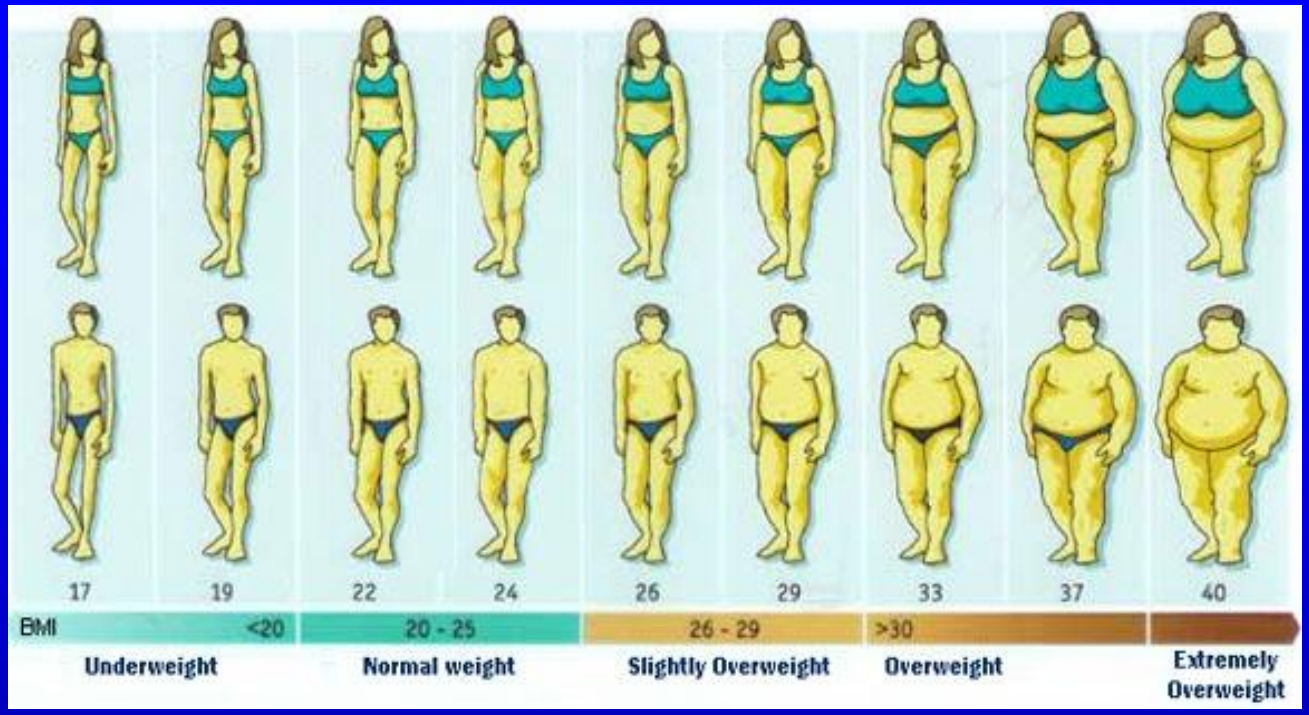


2015
23%
25%

2030 projection: 42% adults in US will be obese

Source: CDC US National center for health statistics NHES & NHANES

ADULT BMI CHART



	Age 14+	
Normal BMI	20 – 25	
Overweight	25 – 30	
Obese	30 – 35	
Severe Obesity	35 – 40	+2 co-morbidities (US Insurance Criteria)
Morbid obesity	40 – 50	(US Insurance Criteria)
Super obese	50 – 55	
Super Super	60+	

CDC TABLES FOR KIDS – EVEN WORSE

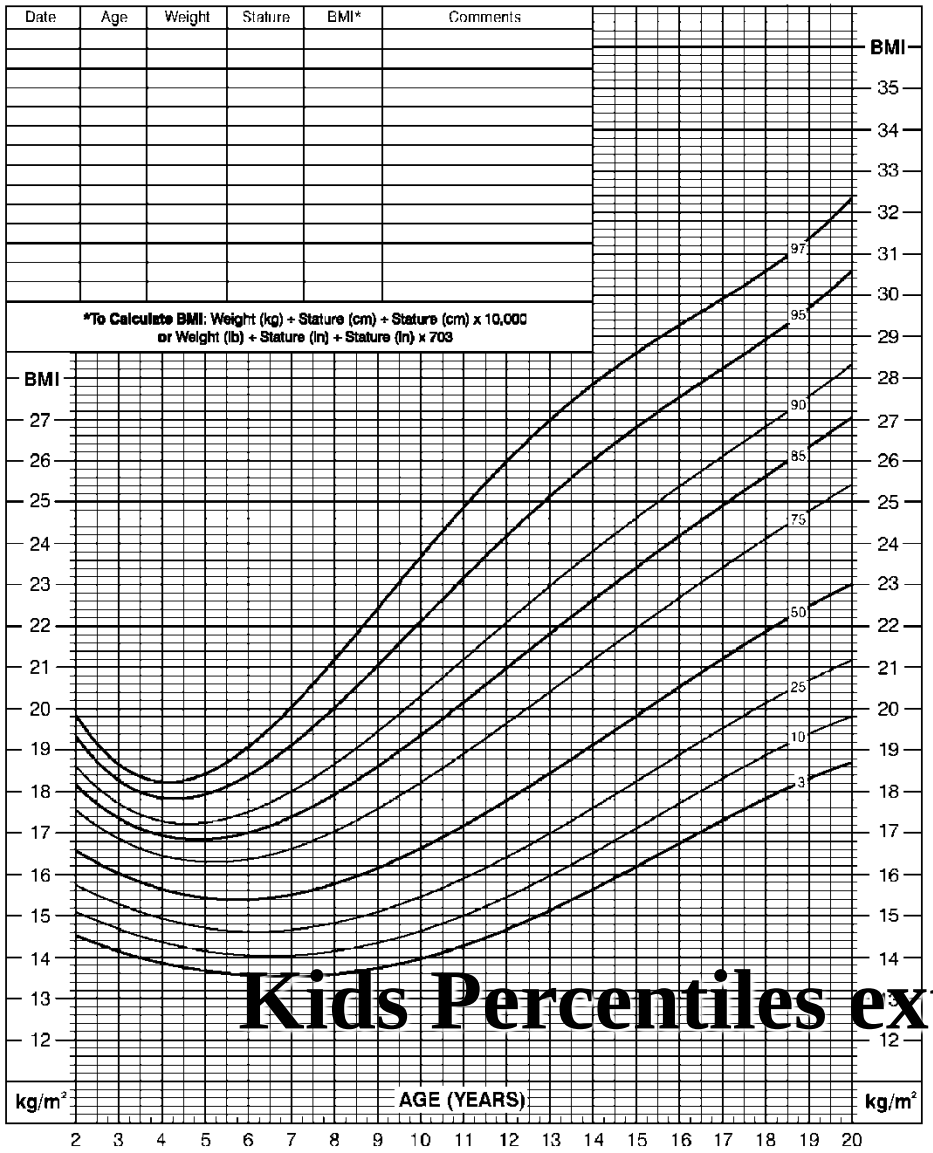
2 to 20 years: Boys
Body mass index-for-age percentiles

NAME _____

RECORD # _____

Date	Age	Weight	Stature	BMI*	Comments

*To Calculate BMI: Weight (kg) ÷ Stature (cm) ÷ Stature (cm) x 10,000
or Weight (lb) ÷ Stature (in) ÷ Stature (in) x 703



Published May 30, 2000 (modified 10/16/00).
SOURCE: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).
http://www.cdc.gov/growthcharts

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WHAT is FAT

Kids Percentiles extrapolate to adult BMI

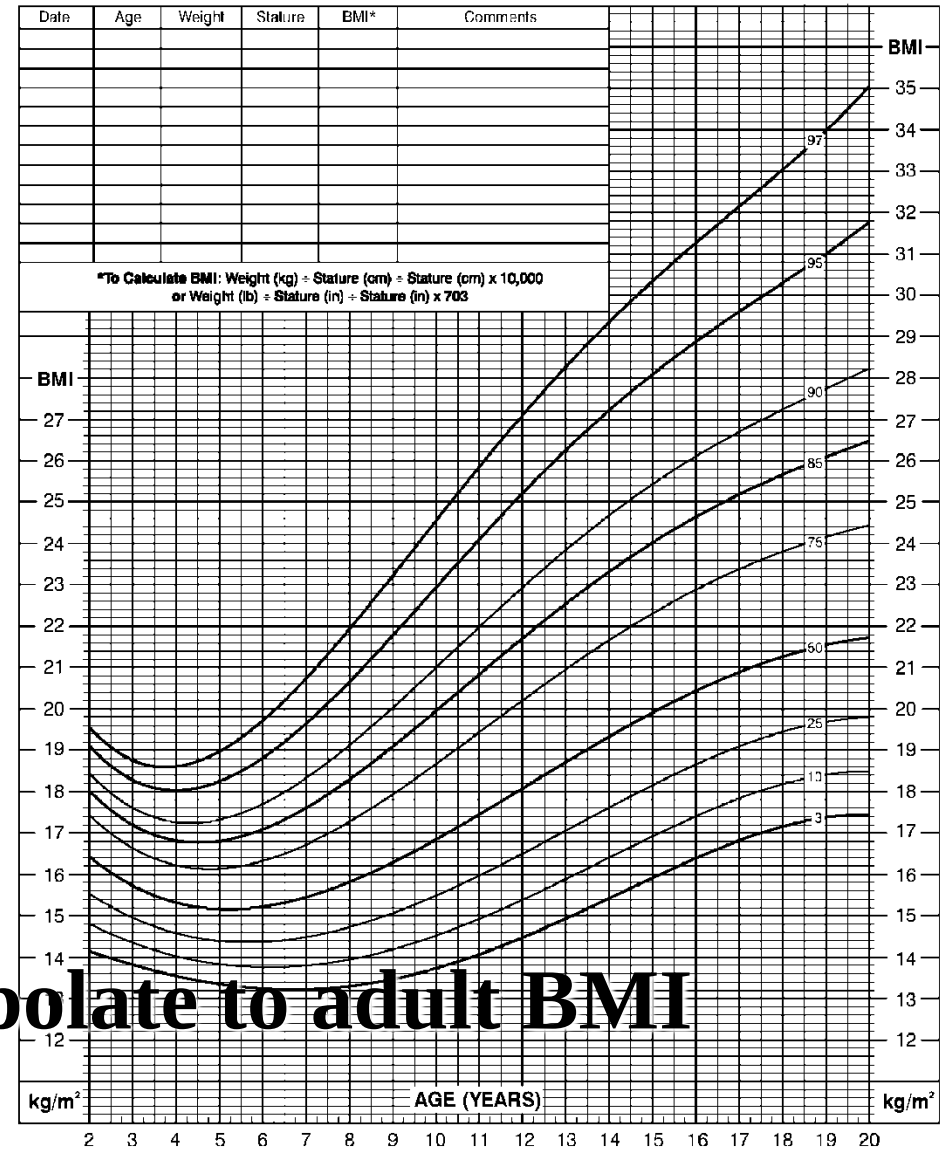
2 to 20 years: Girls
Body mass index-for-age percentiles

NAME _____

RECORD # _____

Date	Age	Weight	Stature	BMI*	Comments

*To Calculate BMI: Weight (kg) ÷ Stature (cm) ÷ Stature (cm) x 10,000
or Weight (lb) ÷ Stature (in) ÷ Stature (in) x 703



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What makes us Fat
Pathophysiology of Obesity

NUTRITION – the gas tank principle

Humans need food 1-3 times per day – powerful somatic signals

NUTRITION
Protein, fat,
fiber, vitamins,
micronutrients,
electrolytes

HYDRATION
water

THIRST CENTER

Quantity and frequency regulated by genetic homeostasis, predetermined by body's needs, ALWAYS important
Thirst center regulates VOLUME
Never drink calories

ENERGY
CALORIES
protein
Carbohydrates
fat

HUNGER CENTER

Quantity/frequency tightly regulated by genetic homeostasis.
"It is impossible to get fat from eating food"
ALWAYS important
(±20% of intake)

HUNGER CENTER

Needed by normal WEIGHT PERSON, NOT required when trying to lose weight
SOMETIMES important
(±80% of intake)

PANCREATICO-HEPATIC CONTROL
Liver triages nutrients and stores glucose;
Insulin-glucagon ratio governs
ebb and flow of energy to and from fat stores
lipogenesis, lipolysis and gluconeogenesis

EGG YOLK

EGG WHITE

The healthy human body alternates between glycosis and ketosis

BRAIN PHYSIOLOGY

Brain can focus for about 20-30 min at any given time then it takes a break

ENDORPHIN CENTER
Actions or Substances That give PLEASURE

- **Most humans develop a diversity of endorphin-activating mechanisms that include pleasurable effort-based actions or the consumption of pleasurable substances**
- **Endorphin-releasing mechanisms are <u>unregulated</u> by genetic homeostasis**
- **Any endorphin-releasing mechanism may become dominant and excessively used**
  - **This results in harm**
- **When the harm is ignored and the behavior continues, its called <u>AN ADDICTION</u>**

WATER VS BEER

RIBEYE VS HAAGEN DAZ

SMOKER

NUTRITION CENTER
PROTEIN FAT WATER

HEALTHY DOG
FAT DOG

SNACKING
emotional, never nutritional

ENDORPHIN CENTER
CARBOHYDRATES

SUGAR IS A DRUG NOT A FOOD

• Glucose is essential to life, but does not need to be consumed since it is produced internally (gluconeogenesis);

• **EGG natures Rubik's cube**

• the historical survival advantage to carbohydrate consumption is now redundant and harmful

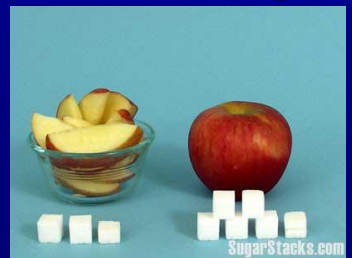
• Powerful endorphin activators:




the more you consume the higher you get the more you desire. Excessive carb consumption (frequency/quantity) results in excess calorie consumption and OBESITY

• 70-90% of an average obese individual's total calorie consumption is carbohydrate:
the result is obesity AND malnutrition by reducing vital nutrients (myth of carbs attached to nutrients: apple vs cookie)

"BAD?"



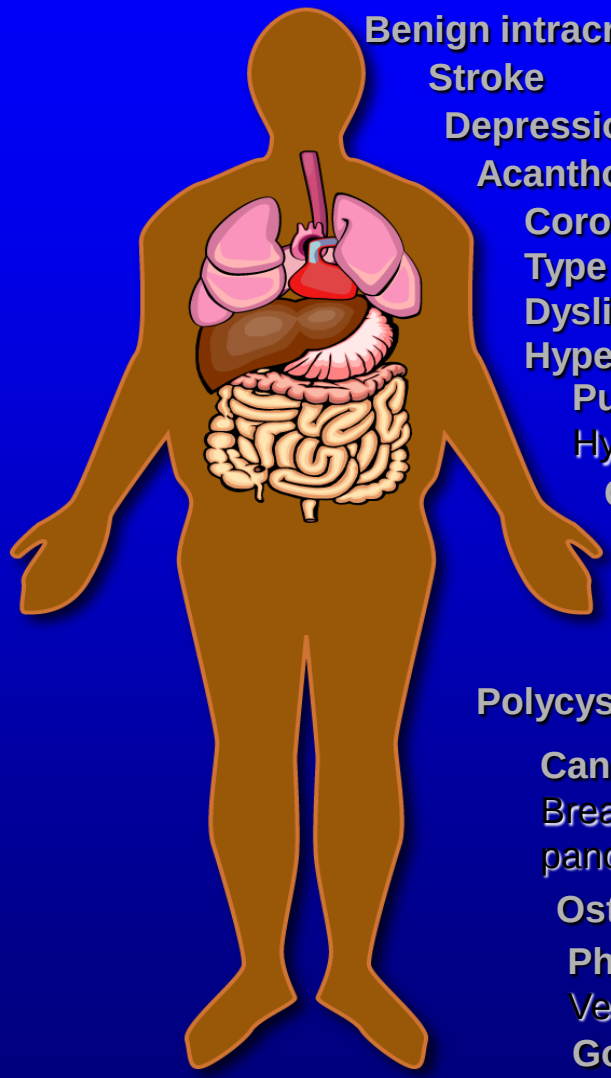
"GOOD?"

IT IS IMPOSSIBLE TO BE FAT AND HEALTHY

CURRENT HYPOTHESIS:
Weight gain CAUSES co-morbidity development

Weight loss RESULTS IN co-morbidity resolution

OBESITY Causes "illth"



- Benign intracranial hypertension-- pseudotumor ceribri
- Stroke
- Depression, psychological disturbance
- Acanthosis Nigricans
- Coronary heart disease
- Type II diabetes
- Dyslipidemia
- Hypertension
- Pulmonary disease - Obstructive sleep apnea
- Hypoventilation syndrome
- Cholesterol gallstones
- GERD, Severe pancreatitis
- Nonalcoholic fatty liver disease
- Steatosis Steatohepatitis, Cirrhosis
- Polycystic ovarian Syndrome
- Cancer
- Breast, uterus, cervix, colon, esophagus, pancreas, kidney, prostate
- Osteoarthritis
- Phlebitis
- Venous stasis
- Gout

TOS, The Obesity Society. http://www.obesityonline.org/slides/slide01.cfm?tk=33&dpg=5. Accessed March 15, 2011

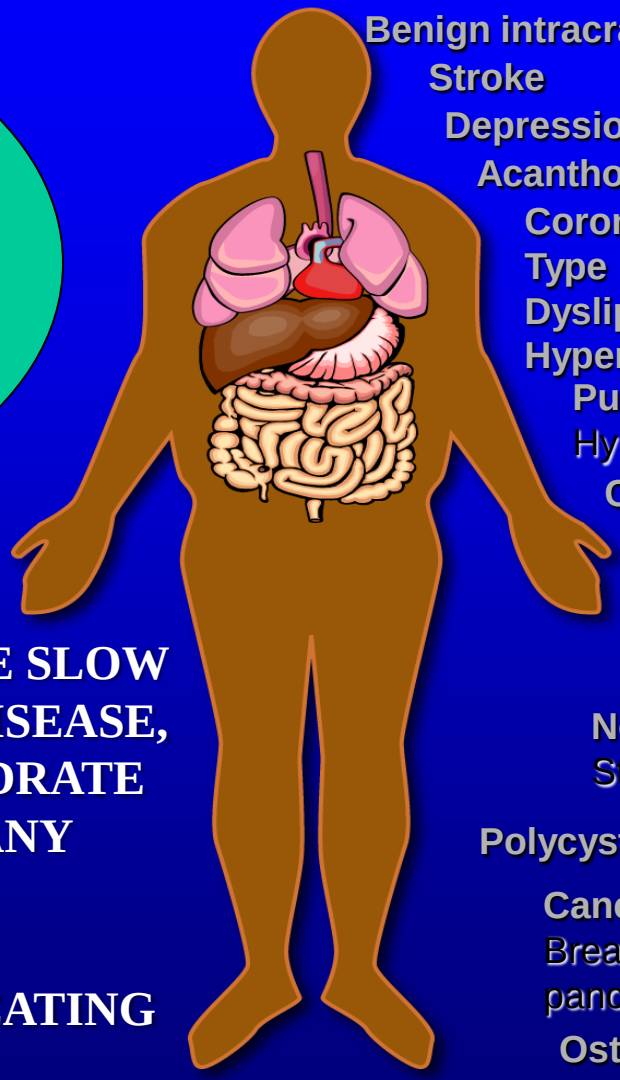
WRONG!

OBESITY PARADOX

Losing weight transiently reduces severity of co-morbidities, slows progression, but does not cure them, requiring ongoing co-morbidity treatment

OBESITY IS A CONSEQUENCE NOT A CAUSE

CHRONIC EXCESSIVE CARBOHYDRATE CONSUMPTION Causes "illth"



WHEN WE TREAT OBESITY WE SLOW THE PROGRESSION OF ONE DISEASE, WHEN WE TREAT CARBOHYDRATE ADDICTION, WE CURE MANY ILLNESSES

SMOKING CESSATION VS TREATING EMPHYSEMA

Benign intracranial hypertension-- pseudotumor ceribri
Stroke
Depression, psychological disturbance
Acanthosis Nigricans
Coronary heart disease
Type II diabetes
Dyslipidemia
Hypertension
Pulmonary disease - Obstructive sleep apnea
Hypoventilation syndrome
Cholesterol gallstones
GERD, Severe pancreatitis

OBESITY is a result not a cause

Nonalcoholic fatty liver disease
Steatosis Steatohepatitis, Cirrhosis

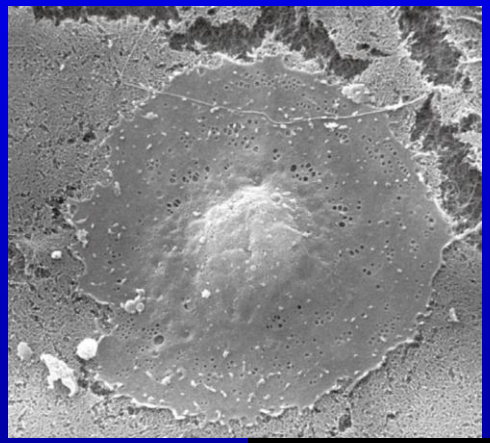
Polycystic ovarian Syndrome

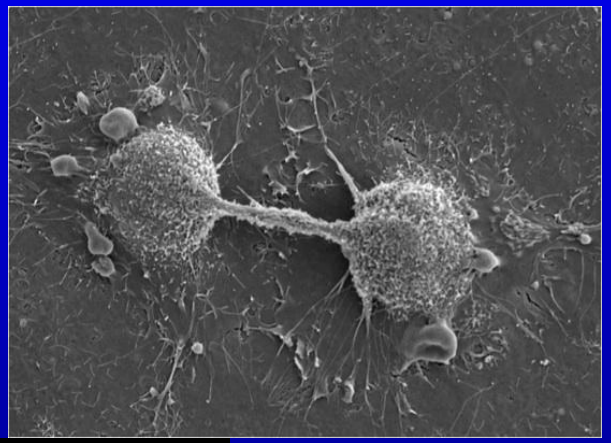
Cancer
Breast, uterus, cervix, colon, esophagus, pancreas, kidney, prostate

Osteoarthritis
Phlebitis
Venous stasis
Gout

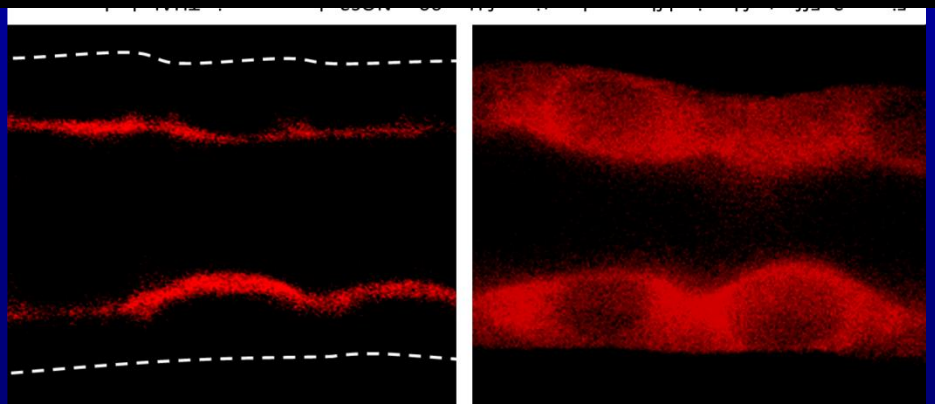
CARBOHYDRATES ARE TOXIC AT CONSUMPTION

TYPE II DIABETES
HYPERTENSION





Hygroscopic effects of glucose causes TII DM and HTN



OBESITY PARADOX

If you eat carbohydrates and exercise, you may not get fat, but the toxic effects still occur: LIPITOR MAN

VS

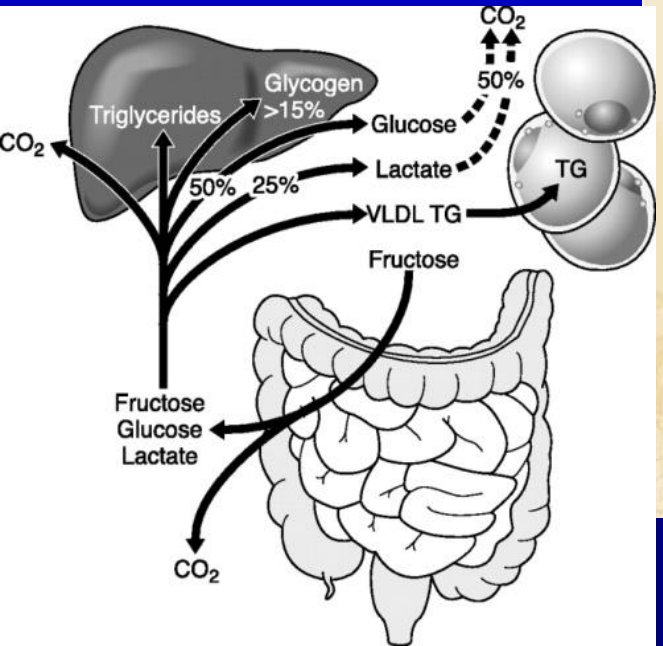
OR

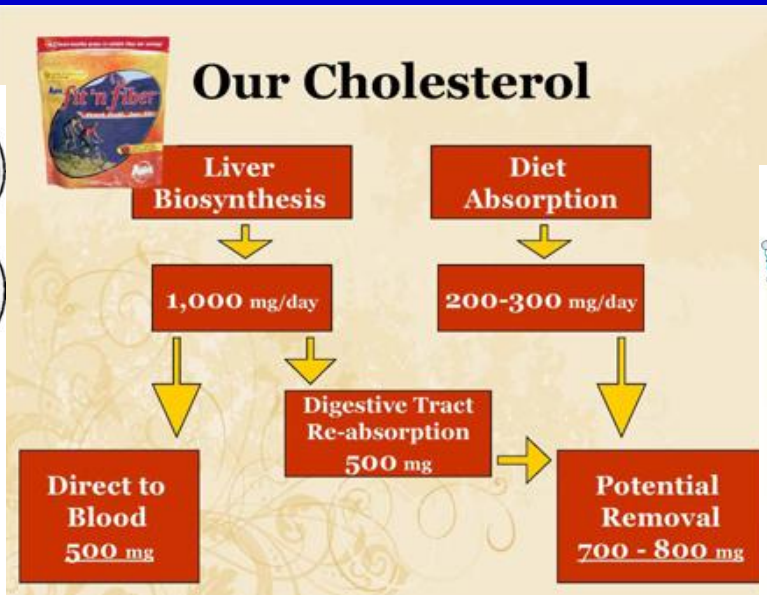
CARBOHYDRATES ARE TOXIC AT CONSUMPTION

CHIPS AHOY - CHOCOLATE CHIP		Strawberries & Cream Oatmeal	
Nutrition Facts		Serving size 1 Packet (35 g)	
Serving Size 40g			
Servings per Container about 1			
Amount Per Serving		Amount per serving	
Calories 190	Calories from Fat 80	Calories 130	Calories from Fat 20
	% Daily Value*		%Daily Value*
Total Fat 9g	14 %	Total Fat 2g	3%
Saturated Fat 2.5g	13 %	Saturated Fat 0.5g	2%
Cholesterol 0mg	0 %	Trans Fat 0g	
Sodium 140mg	6 %	Polyunsaturated Fat 0.5g	
Total Carbohydrate 27g	9 %	Monounsaturated Fat 0.5g	
Dietary Fiber 1g	4 %	Cholesterol 0mg	0%
Sugars 13g		Sodium 180mg	7%
Protein 2g		Potassium 100mg	3%
Iron 4 %		Total Carbohydrate 27g	9%
*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:		Dietary Fiber 2g	8%
		Soluble Fiber 1g	
		Sugars 12g	
		Protein 3g	

Bad CHOLESTEROL comes from production NOT consumption

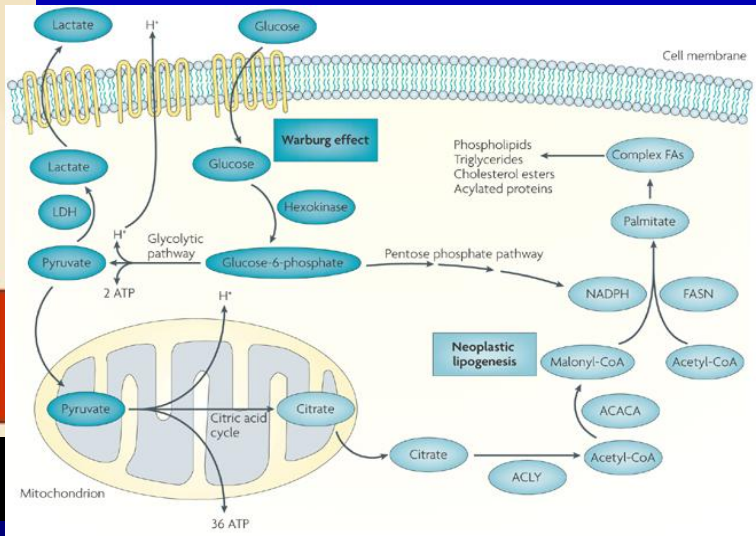
Sugar content outweighs fiber protection





LDL, VLDL

HDL



CHILD/ADOLESCENT OBESITY AND UNDIAGNOSED COMORBIDITIES: A CASE SERIES STUDY IN BARIATRIC MEDICINE

MPH study: J. M. Richards, 2013

Sociodemographic Characteristics of the Study Population

Characteristics	N (110)	Percentage
Males	42	38.2
Females	68	61.8
White	58	52.7
Black	36	32.7
Hispanic/other	16	14.6

Continuous Variables	Mean	Median
Age (range 10-20 yrs)	16.4 years	16.0 years
Initial BMI	46.1 kg/m^2	44.2 kg/m^2
Final BMI (3 yrs postop)	29.8 kg/m^2	29.1 kg/m^2

Prevalence of Co-morbidities in Study Population

Variables		Percentage
Hypertension	History prior to initial evaluation	11.8
	Incidence at Bariatric Evaluation	42.3
	Three years post PLAGB	6.4
Dyslipidemia	History prior to initial evaluation	8.2
	Incidence at Bariatric Evaluation	30.7
	Three years post PLAGB	16.4
Type 2 diabetes	History prior to initial evaluation	15.5
	Incidence at Bariatric Evaluation	28.0
	Three years post PLAGB	8.8

Hypertension: BP > 97%ile or > 140/90

Diabetes: HgA1C > 6.0

Dyslipidemia: Tot Chol > 200 mg/dL, LDL > 100 mg/dL, HDL < 39 mg/dL, TG > 150 mg/dL

Kicked off dance squad to soloist in 1 yr

Co-morbidities

Cost of being fat?
Cody has an artificial hip – age 15
His 1 yr before & after

Prozac, Lithium, abilify, Baker Actx3

OFF ALL

Who becomes fat - The Vulnerable Population

Psychology of Obesity

Vulnerability: At risk for addictive behavior

Attachment disorders: primal stress creation/ablation; role of breast feeding

Catastrophic events: Sandyhook kids, uninvited incest, etc.

Parenting Style: consistent with dysfunctional emotive resolution

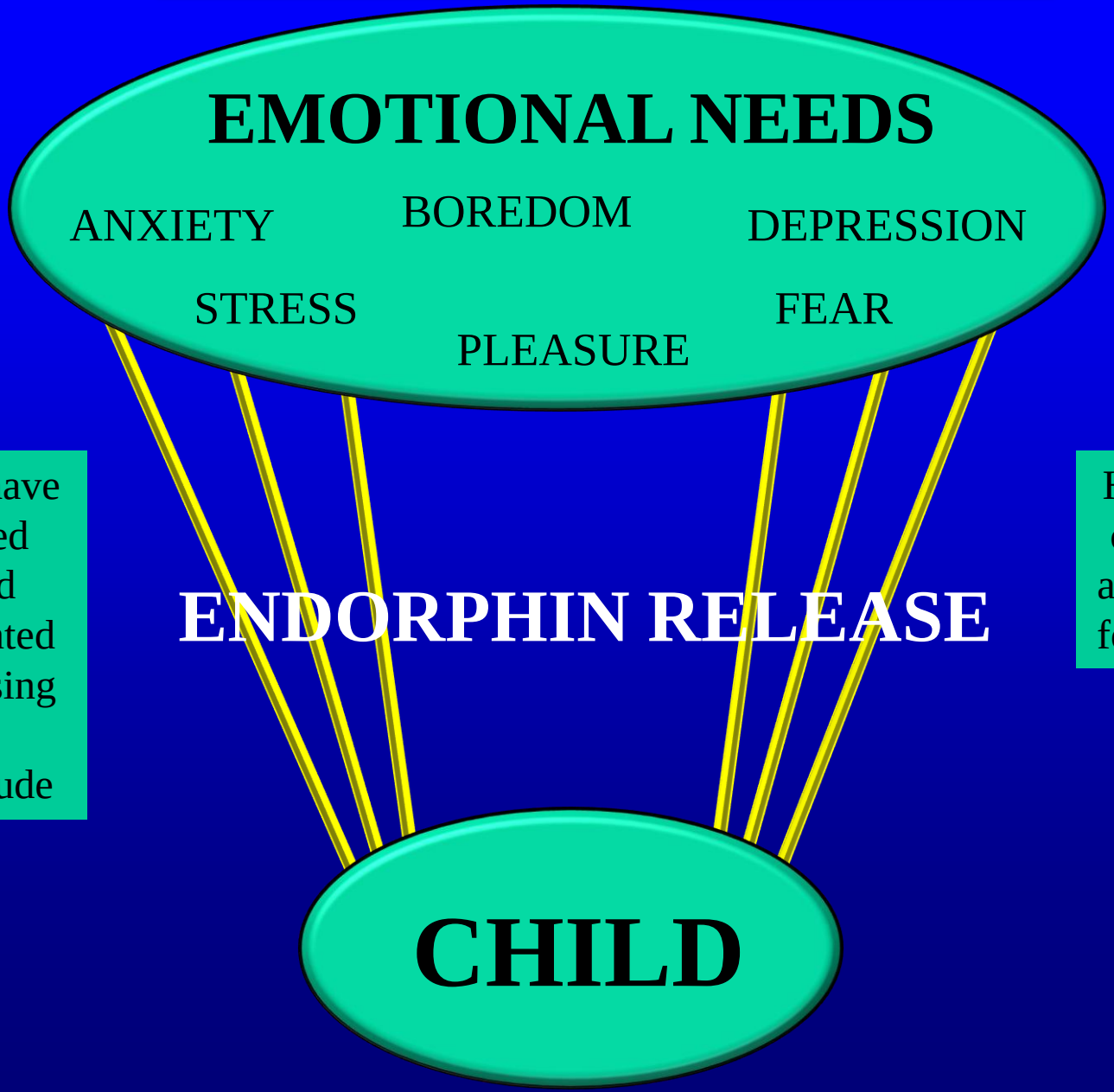
Permissive/Hedonistic: the fat family
Child never identifies a sense of self, simplistic coping skills
Rules are speed bumps without consequence, trivial goal setting, mistakes irrelevant, never need to learn

Authoritarian: tough, tough, tough. Skinny mom fat kid
Distorted/eroded sense of self: never good enough, never allowed mistakes, never learns, told what to do
Strict rules with harsh consequences, ridiculously high expectations
Absorb emotional distress, triangulate to substance stress resolution pathways

Neglectful: No parenting guidance, false sense of self
Child has to create own rules, boundaries and habits

IDENTIFY PARENTING STYLE EARLY TO ADJUST THERAPY MODEL

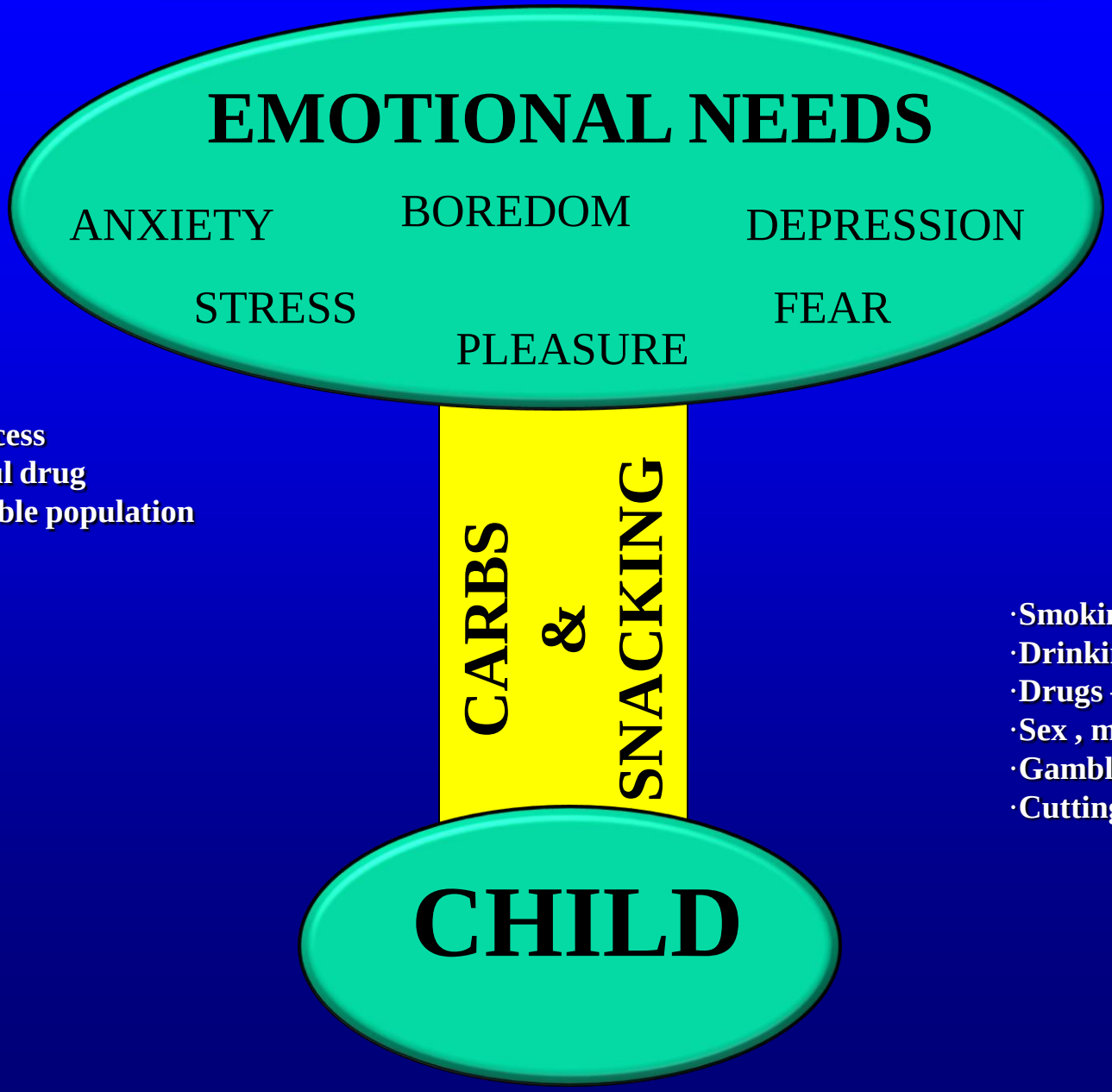
Psychophysiology of Obesity



Healthy people have diverse balanced action-oriented internally generated endorphin-releasing foundations Fortress of Solitude

Healthy people have controlled snacking and carbohydrate use for endorphin release

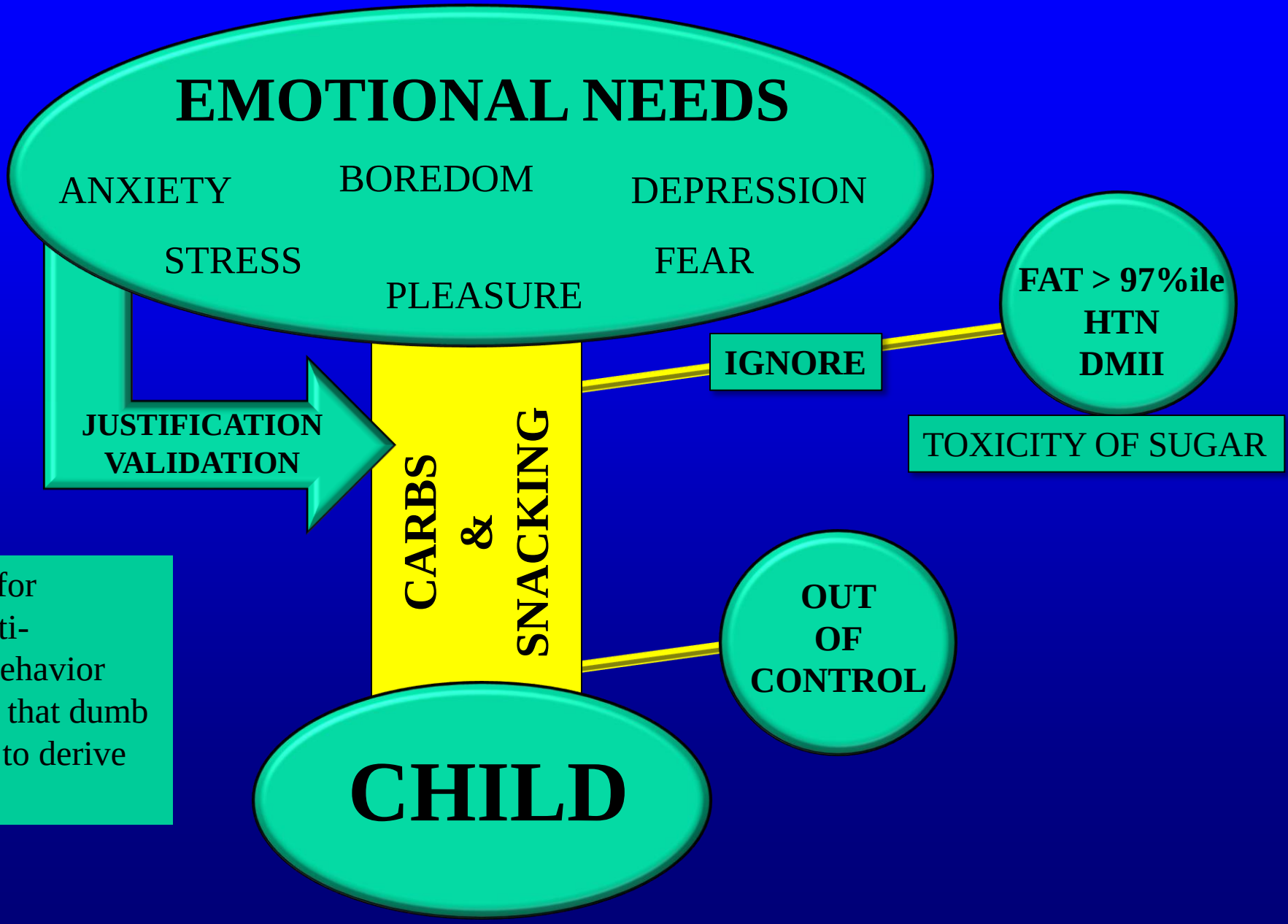
Psychophysiology of Obesity



- Easy access
- Powerful drug
- Vulnerable population

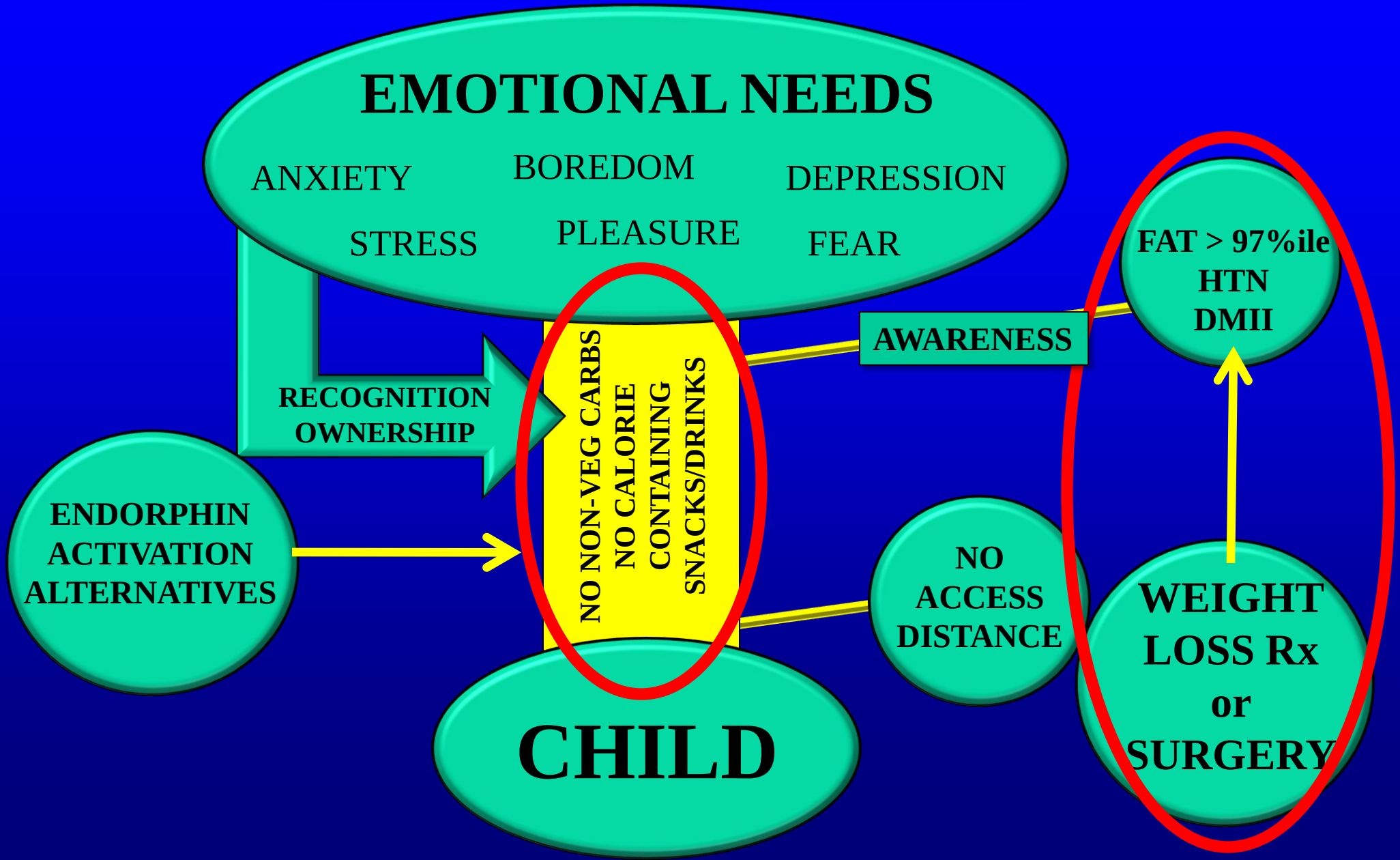
- Smoking and nicotine
- Drinking and alcohol
- Drugs – snort smoke inject
- Sex , masturbation, porn
- Gambling
- Cutting (40%)

Psychophysiologic cycle of Obesity



Increasing need for psychotropic, anti-depressant and behavior modifying drugs that dumb down the ability to derive pleasure

Psychophysiology of Obesity



GOALS

EFFECTIVE LIFESTYLE CHANGE

EMOTIONAL STABILITY

GREAT SENSE OF SELF WORTH

GREAT SELF ESTEEM

ABILITY TO LEARN AND TOLERATE MISTAKES

GOALS

LOOKING GREAT

FEELING GREAT

EMOTIONALLY WELL BEING HEALTHY

USING LIFE TO BLOW OFF EMOTIONAL STEAM

ACTION "SNACKS"

"DOING" PROJECTS

CONSEQUENCE

WEIGHT LOSS Rx or SURGRY

CHILD

REDUCED need for psychotropic, anti-depressant and behavior modifying drugs. Greater internal mechanisms of emotive management

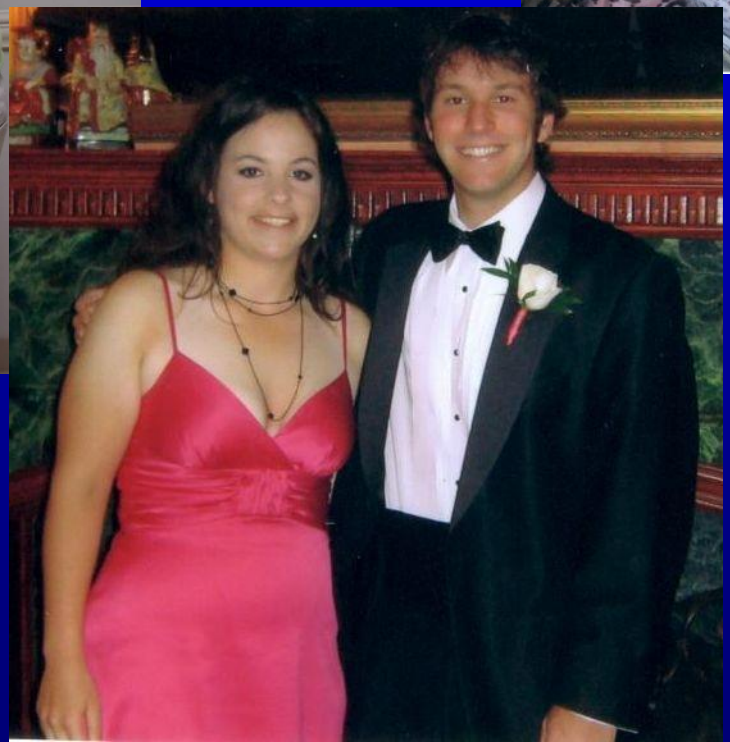
OBESITY IS NOT A WEIGHT PROBLEM
OBESITY IS NOT A CALORIE PROBLEM
OBESITY IS NOT A LACK OF PHYSICAL ACTIVITY PROBLEM

DIETS AND EXERCISE PROGRAMS DO NOT WORK
EXCEPT TRANSIENTLY

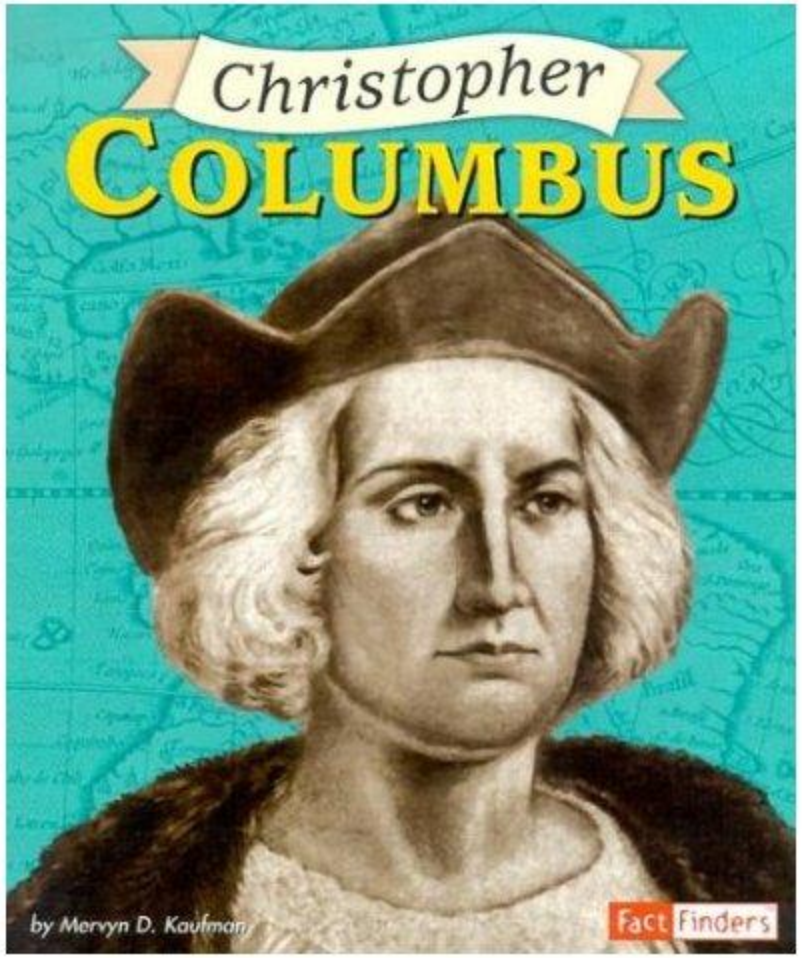
OBESITY IS A SUBSTANCE ABUSE PROBLEM

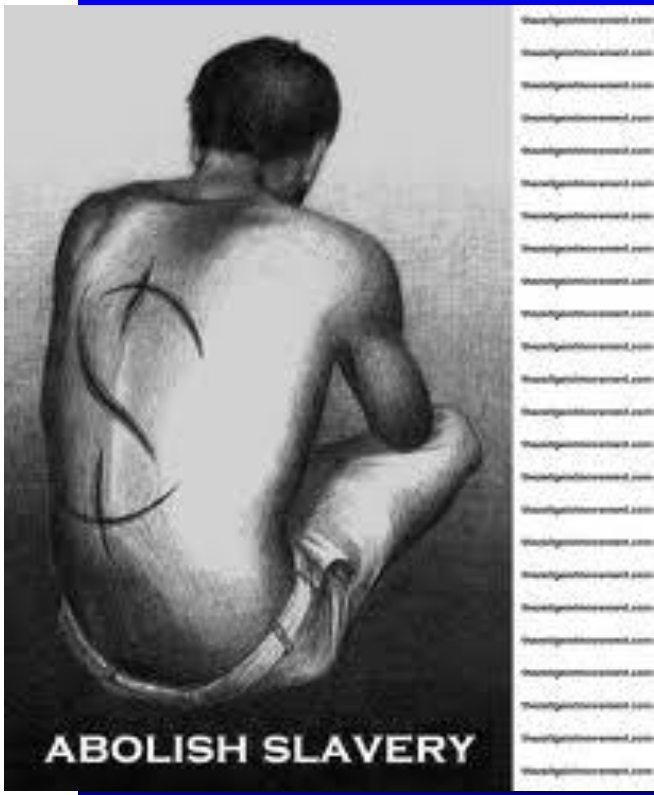
REQUIRING A CBT APPROACH TO STRESS, EMOTION AND PLEASURE MANAGEMENT

My First in 2004 and My second youngest age 11



Why now – Epidemiology of the Obesity Epidemic





EVOLUTION OF OBESITY

Post WWII: Worldwide hunger – shortage of agricultural products

Circa 1950: ability to MANUFACTURE food (breast milk vs formula)
BELIEF that fat consumption and physical inactivity = obesity
AN INDOCTRINATED MISBELIEF: FAT BAD:CARBS GOOD
Paradox: US obesity and metabolic syndrome rates started to climb

NO FACTUAL BASIS TO SUPPORT THIS HYPOTHESIS

Food production became low fat, but food tasted terrible
FRUCTOSE CORN SYRUP, GLUTEN FILLERS, CARBOHYDRATES replaced fat in our diet
Carbohydrates allow mass production through FOOD PROCESSING with nutrient additives
This resulted in EASY ACCESS and AVAILABILITY to everyone
Unrecognized powerful ENDORPHIN stimulatory effect of carbohydrates

ENVIRONMENTAL/SOCIETAL FACTORS

Food and drink:

For the first time ever, society is condoning easy access and ready availability of an endorphin-releasing drug (carbohydrates) to children

Concentrated manufactured carbohydrates esp. fructose corn syrup

Convenience – no preparation required

Production/manufacture, packaging, portion sizes, marketing, cost

Misleading "nutritional Facts"

Everyone's an expert: failure of Diet and Exercise Models

Endorphin deprivation:

Reduction of sources of action-oriented stress management and endorphin release

Less activity/exercise, free play time, no fortress of solitude (fridge and pantry)

More screen time, "safety", schools n rules n shit, neighborhoods, less friends,

More organized activities: TOO MUCH TEACHING TOO LITTLE LEARNING

Less sleep

OBESITY IS NOT A HUNGER OR NUTRITION PROBLEM
ITS A PLEASURE PROBLEM

UNDERSTANDING OBESITY

WHY WE EAT

THIRST/HUNGER CENTER

PLEASURE/ENDORPHIN CENTER

HOW WE EAT

REGULATED VS OPPORTUNISTIC

SOMATIC HUNGER EMOTIVE HUNGER

WHAT WE EAT

NUTRIENTS VS DRUGS

HARM ONLY OCCURS WITH UNCONTROLLED EXCESS

VULNERABILITY TO ADDICTION

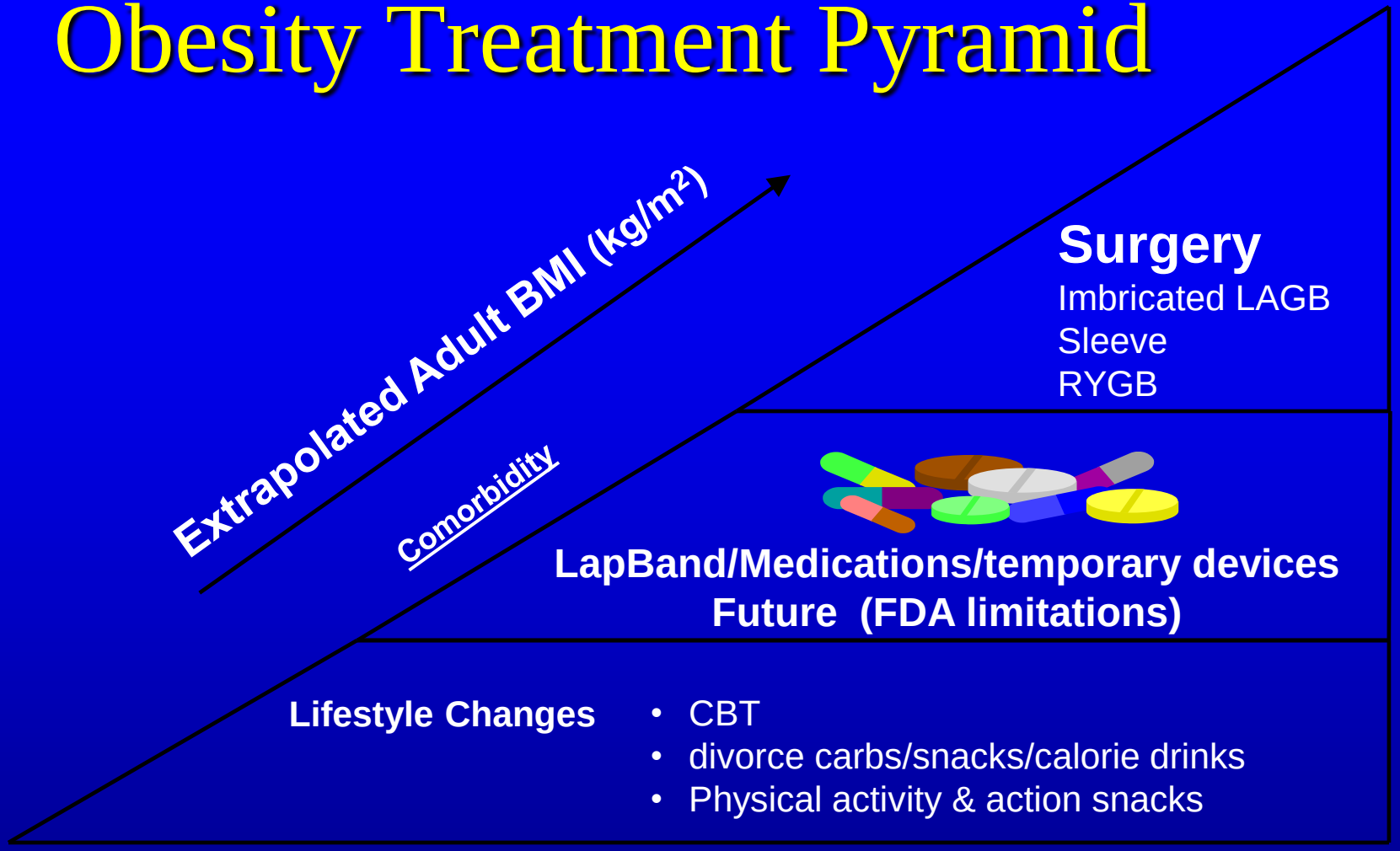
TREATMENT

Grant me the serenity
to accept the things I cannot change;
courage to work at changing the things I can;
and the wisdom to know the difference.

Living one day at a time;
Enjoying one moment at a time;
Accepting hardships as the pathway to improvement;
Taking this imperfect world
as it is, not as I would have it;
Trusting that good enough is good enough if the effort is put forth;
That I may be reasonably happy in this life
and content with my assets – mind, body, soul and circumstance.

***--Reinhold Niebuhr** modified by RC*

Obesity Treatment Pyramid



National Institutes of Health et al. http://www.nhlbi.nih.gov/guidelines/obesity/prctgd_c.pdf. Accessed November 20, 2006.

"PROCESS OF CHANGE"

Pre-contemplation, contemplation, preparation, INTERVENTION, action, maintenance, restart

A MULTIDISCIPLINARY COGNITIVE BEHAVIORAL THERAPY MODEL

FIRST CONTACT
GOAL: Program entry, NEW HOPE, not a diet. OWNERSHIP (contemplation)

PRECARE Understanding FAMILY DYNAMCS
engagement of child, capacity for change (preparation)
GOAL: Build a relationship of trust with family/child: concept of CHANGE

"DIVORCE" PHASE May involve meds, devices or surgery
Breaking habits and relationships (SNACKS & CARBS)
REPLACEMENT: Rules with consequences, EFFORT-BASED (action phase I)
GOAL: rapid weight loss, co-morbidity improvement

SUCCESS PHASE Developing diverse new strategies for emotional emancipation
Action Snacks + Project Development Creating new habits + relationship with self (action phase 2)
GOAL: New foundation to deal with life, restoration of sense of self

AFTERCARE ongoing contact and reinforcement (Maintenance)
GOAL: Successful transformation of emotion management strategies – Sense of Self

RECAPTURE
including use of pharma, temporary devices, surgery

How does Weight Loss Surgery Work?

Surgery: reduced calorie consumption, prolonged satiety **(weight loss)**

Human nature: restore status quo **(weight regain)**

Obesity management: Modify source of endorphin release

EFFECTIVE DURABILITY OF WEIGHT LOSS after surgery 1-3 YRS

TOOL TO Rx XS WEIGHT **NOT A MAGIC BULLET**

DURABILITY OF SURGICAL CHANGES LIFELONG

A patient has to live for the rest of life with the consequences of what we do

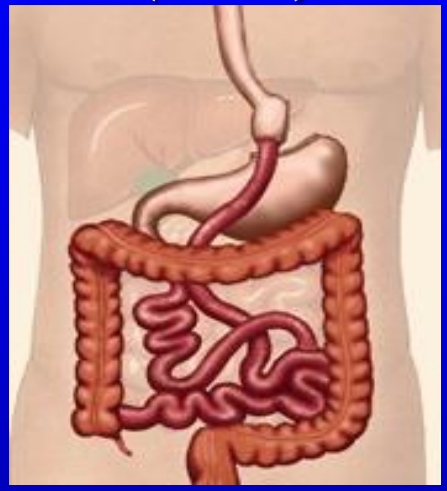
Choose the most effective, least destructive/invasive, safest surgery

WHAT TYPE OF SURGERY IN ADOLESCENTS?

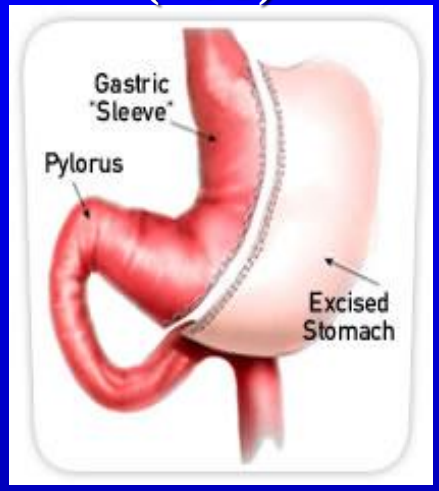
Absolutely not | **No** | **Yes** | **Yesish**

Bilio-Pancreatic Diversion (BPD)

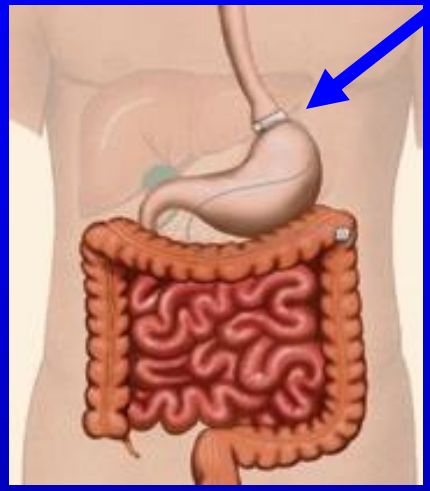
Gastric Bypass (RYGB)



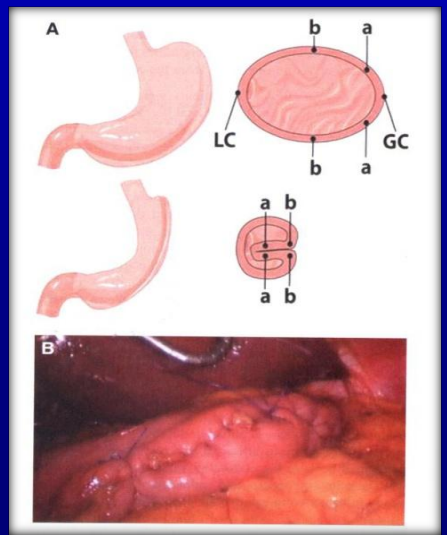
Sleeve gastrectomy (VSG)

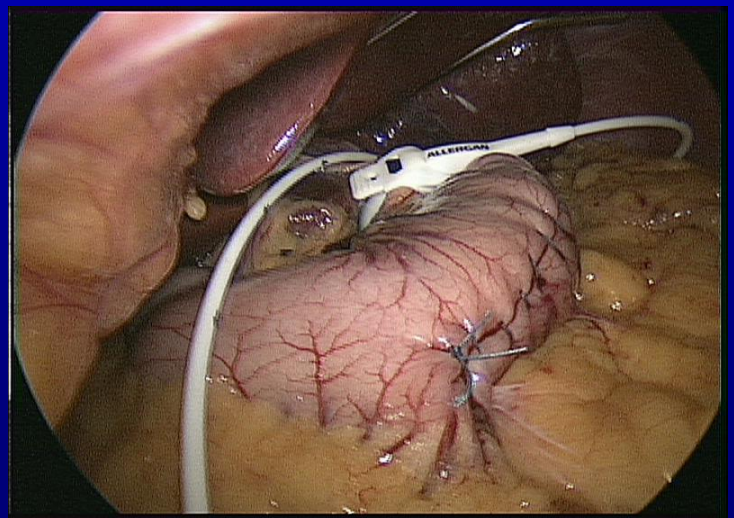


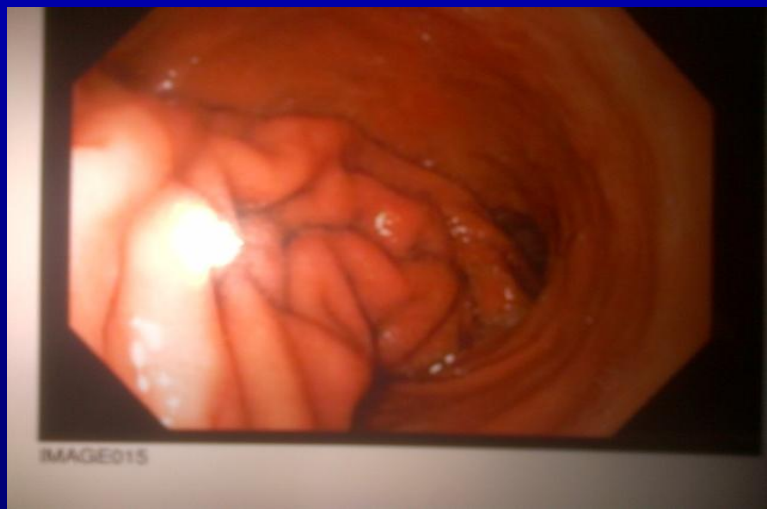
Adjustable gastric band



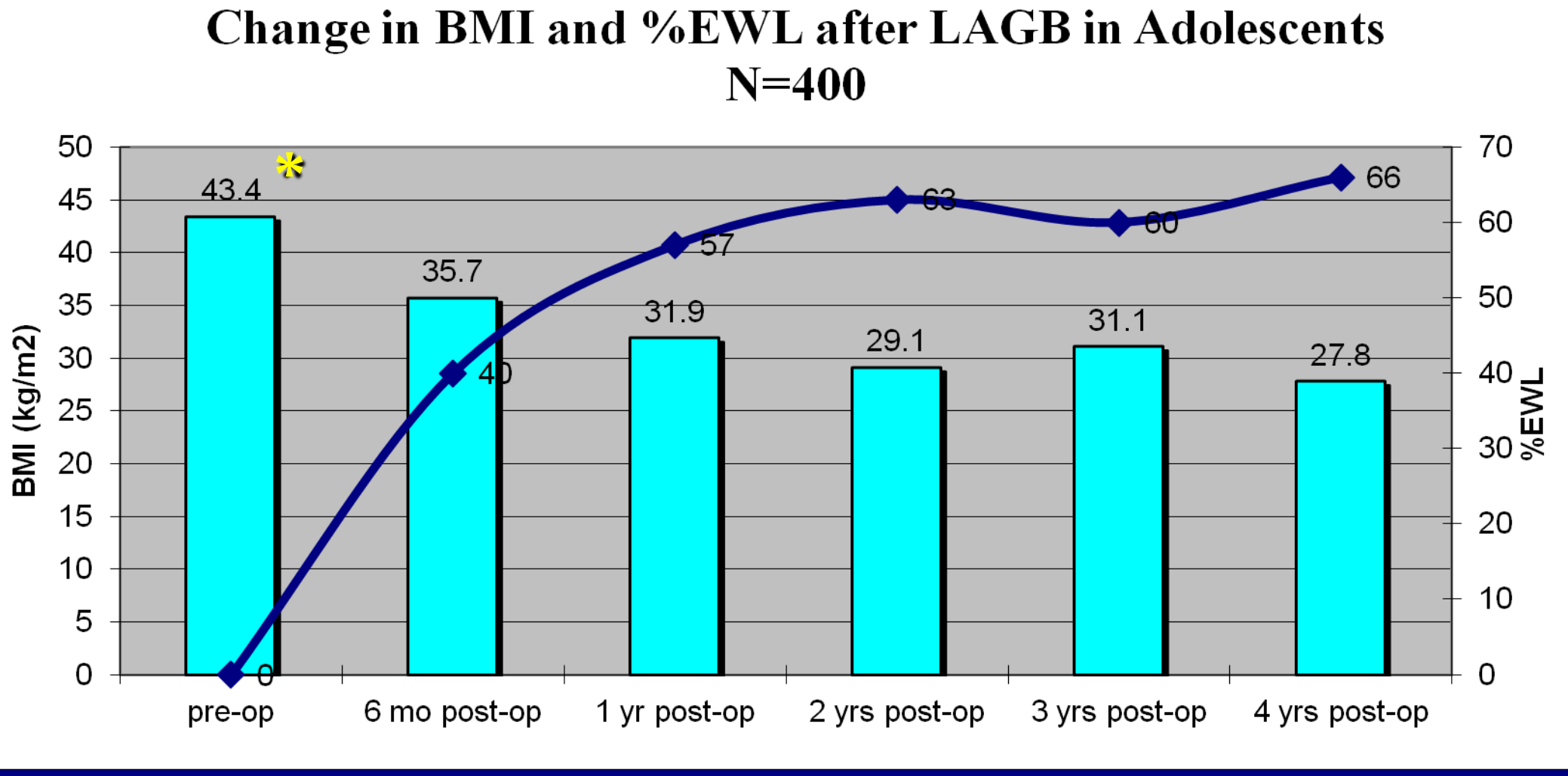
YES - Newer surgeries: Imbricated LapBand





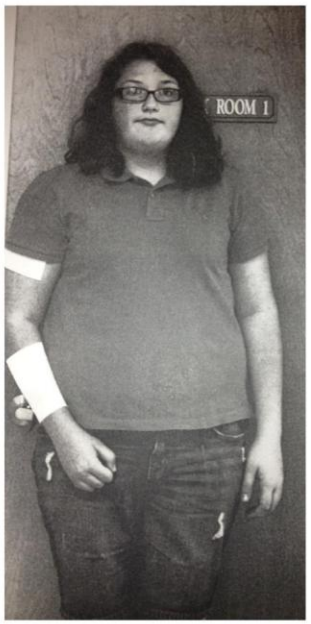


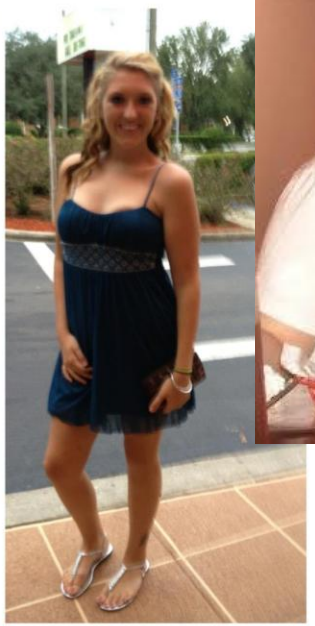
Efficacy of BARIATRIC SURGERY



*BMI at enrollment. Mean time to surgery 11 months. Lean Teen Program, JSAPA.

Its about how we look, how we feel and how we function

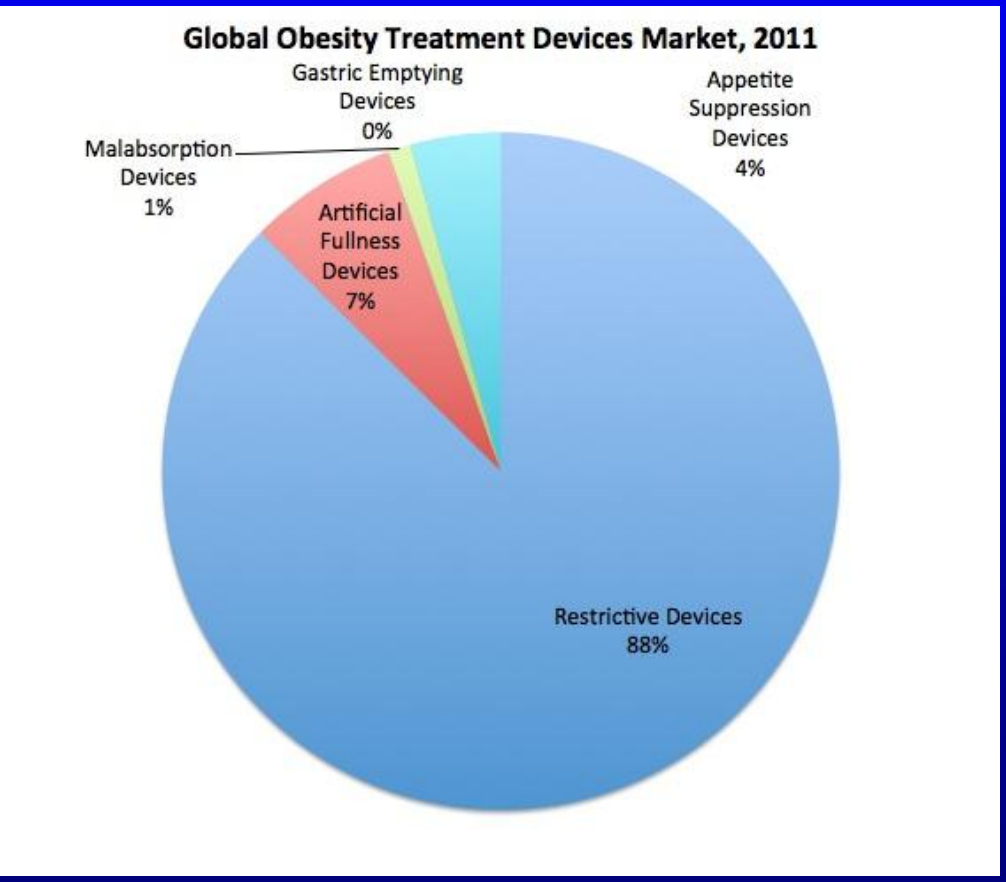


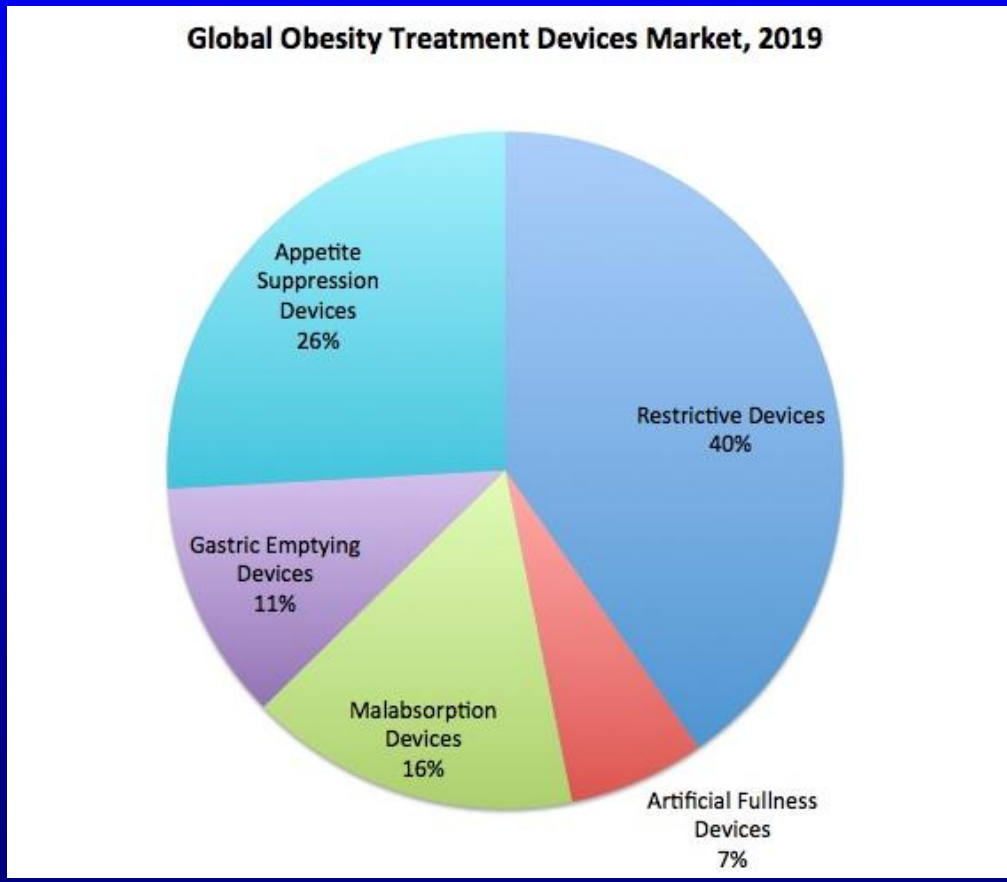


Changing our APPROACH to Weight Loss Management

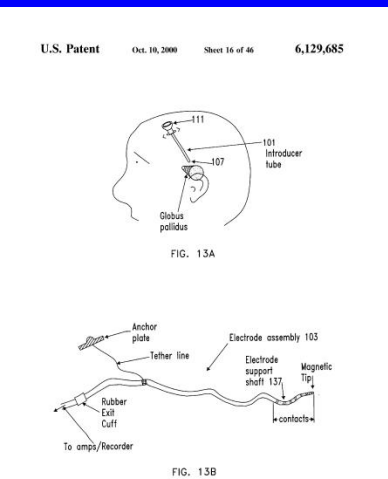
Multimodal, sequential, temporary devices, procedures and medications

Contemplation, preparation, INTERVENTION, action, maintenance, restart, ADDITION



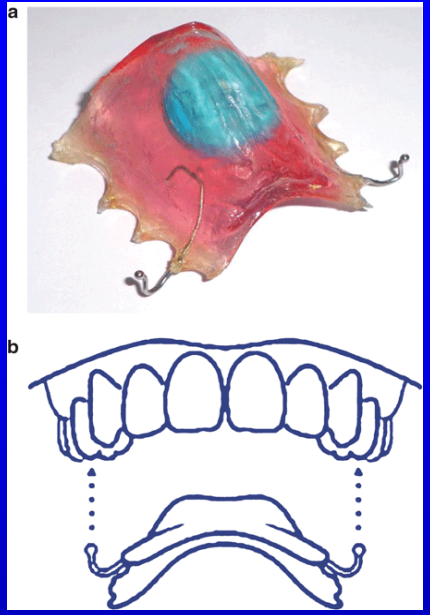


FUTURE STRATEGIES



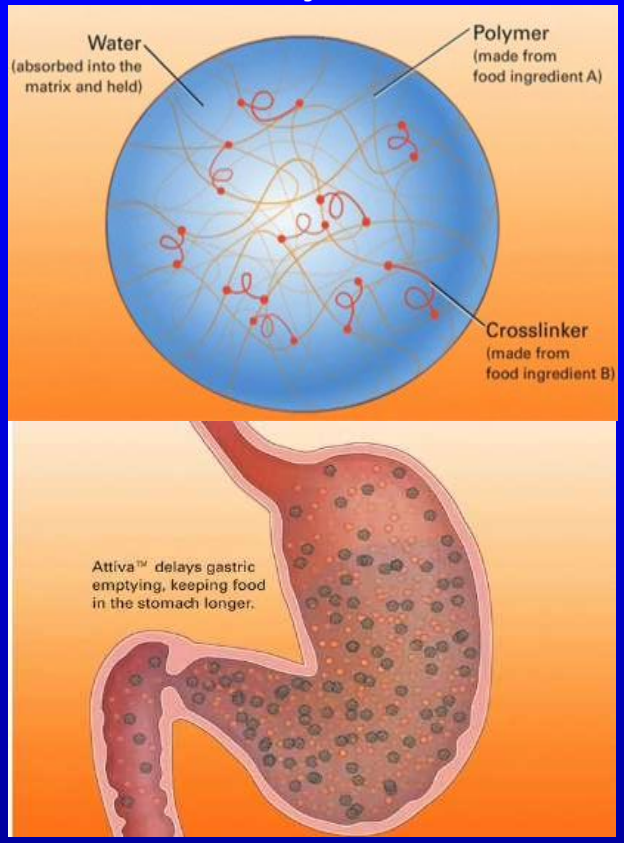
Apparatus and methods for regulating the appetite of an individual suffering from morbid obesity, the apparatus including a plurality of stimulation electrodes arranged longitudinally on at least one electrode support shaft for insertion within the hypothalamus for outputting electrical discharges to specific sites within the hypothalamus. Each of the plurality of stimulation electrodes may be independently controlled. Electrical discharge of various frequencies transmitted from one or more of the plurality of stimulation electrodes, and delivered to a region of the hypothalamus that is involved with either stimulating or inhibiting appetite, may be used to regulate appetite in the individual. Alternatively, an individual's appetite may be regulated by the microinfusion from at least one microinfusion catheter of an appropriate quantity of a suitable drug to a distinct site or region within the hypothalamus.

Neuroprobe Neurotransmitter Modulation



Oral Volume Restriction Device

Gelesis Attiva Polymer Fill



Phentermine and other pharmacologic neuromodulators

Full Bar

Vagal Nerve Pacing VBLOC

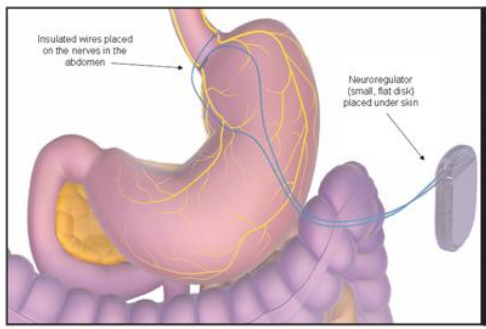


FIGURE 6. VBLOC Maestro generator and lead placement. (Courtesy of Enteromedics)

FIGURE 7. The actual device now being used in the EMPOWER study. The round generator is implanted with the leads. The black "battery" is worn on a belt to power the device. (Courtesy of Enteromedics)

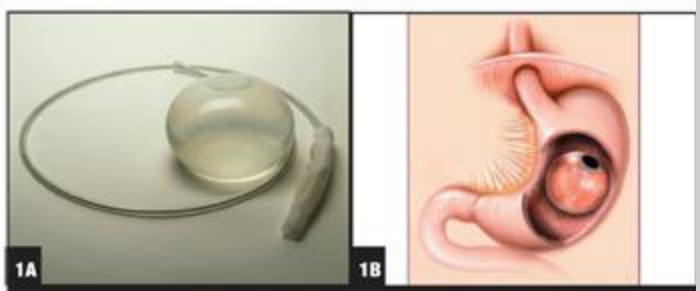
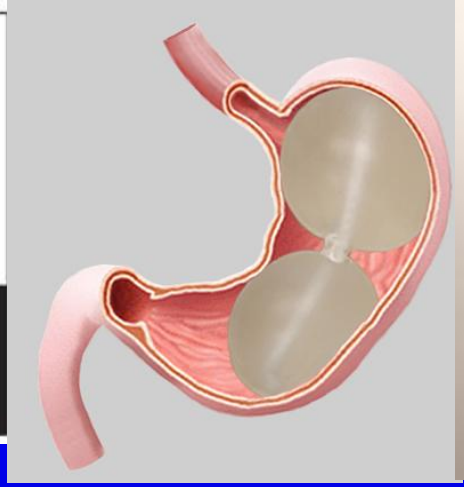
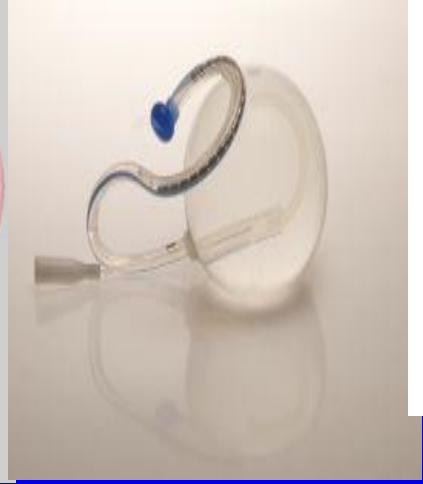


FIGURE 1A: Allergan's ORBERA™ (intragastric balloon) System, which is only approved for use in several countries in Europe at this time. 1B: Diagram depicting ORBERA™ System deployed within the stomach. *Photographs used with permission of Allergan.*

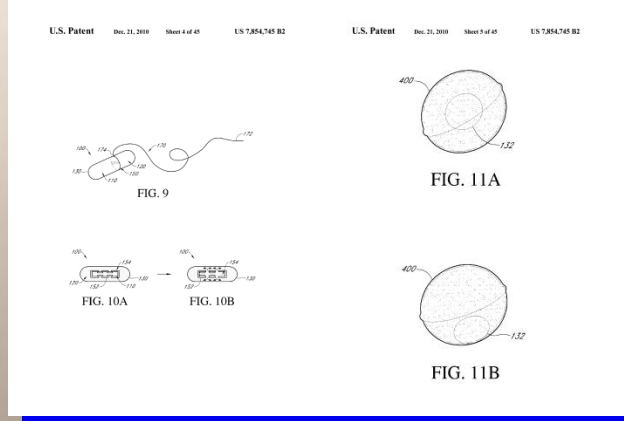
BIB Orbera
Garren-Edwards Bubble
BaraNova AGN



Reshape Duo Balloon



Sydney Balloon



Obalon Ingestible Balloon

INTRAGASTRIC TEMPORARY DEVICES

Endobarrier and Endosphere and ValenTx

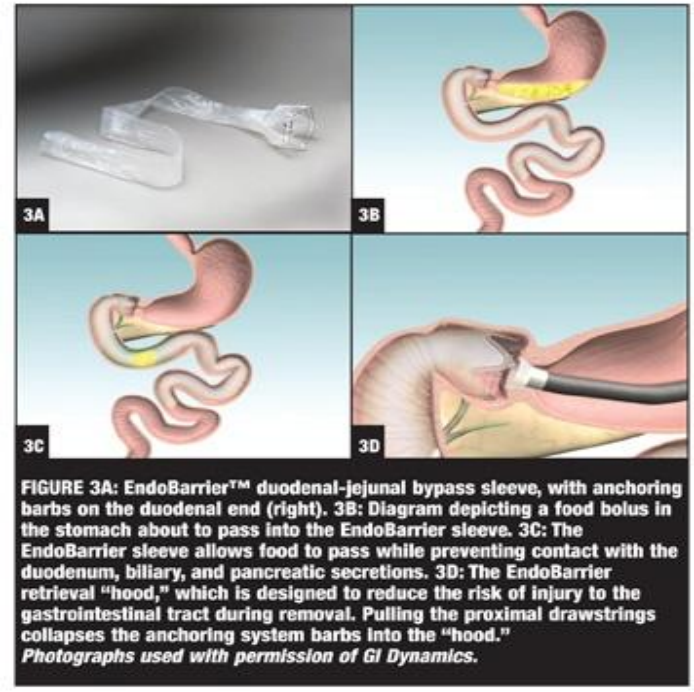
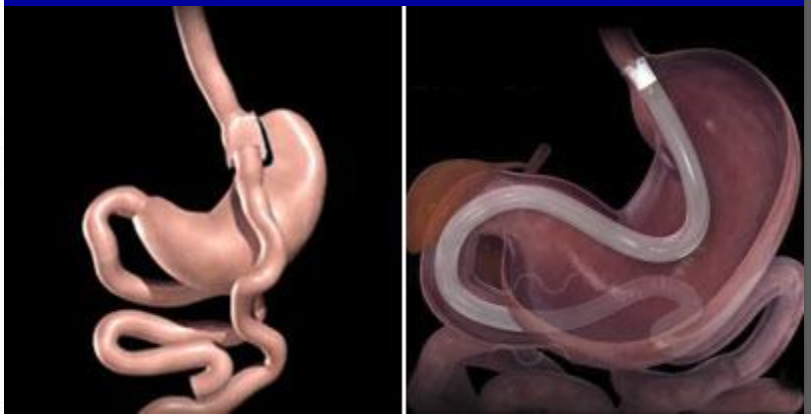
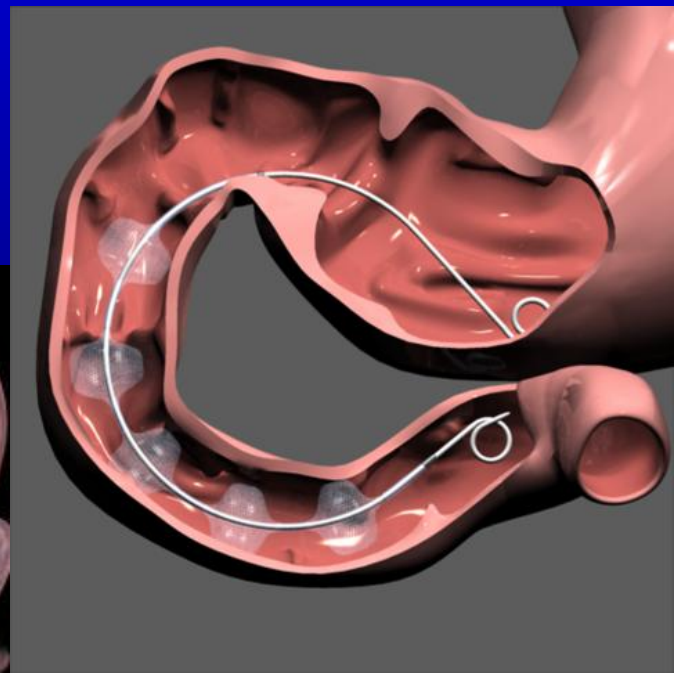


FIGURE 3A: EndoBarrier™ duodenal-jejunal bypass sleeve, with anchoring barbs on the duodenal end (right). 3B: Diagram depicting a food bolus in the stomach about to pass into the EndoBarrier sleeve. 3C: The EndoBarrier sleeve allows food to pass while preventing contact with the duodenum, biliary, and pancreatic secretions. 3D: The EndoBarrier retrieval "hood," which is designed to reduce the risk of injury to the gastrointestinal tract during removal. Pulling the proximal drawstrings collapses the anchoring system barbs into the "hood." *Photographs used with permission of GI Dynamics.*





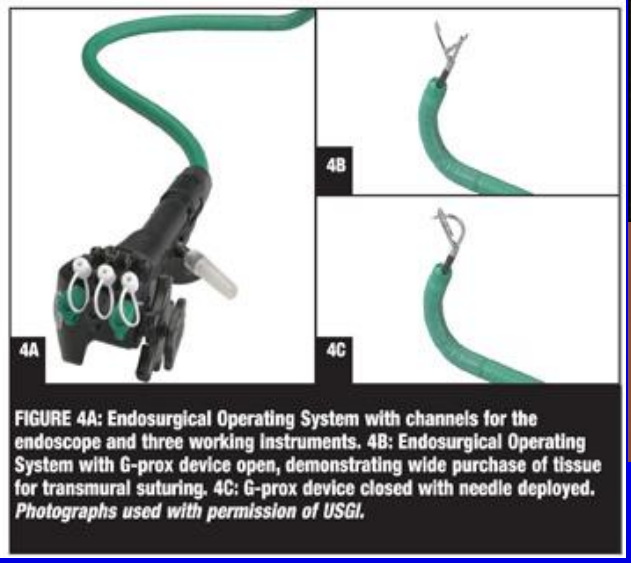


FIGURE 4A: Endosurgical Operating System with channels for the endoscope and three working instruments. 4B: Endosurgical Operating System with G-prox device open, demonstrating wide purchase of tissue for transmural suturing. 4C: G-prox device closed with needle deployed. *Photographs used with permission of USGI.*

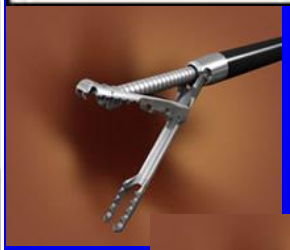
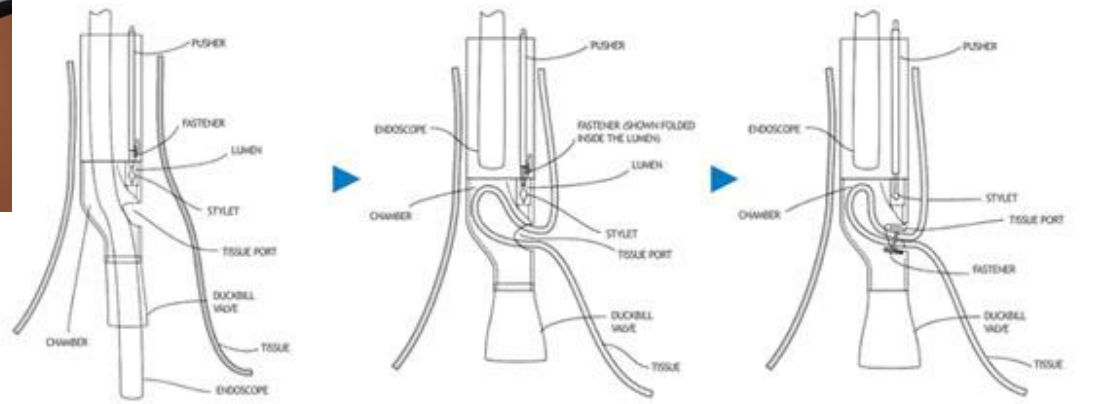


FIGURE 5: StomaphyX™ device. 5B: StomaphyX device tip with H-fastener deployed through the suction channel. *Photographs used with permission of EndoGastric Solutions, Inc.*



Endoluminal Suturing Platforms

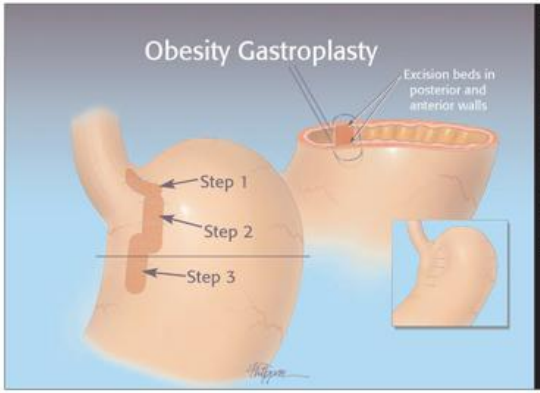


FIGURE 4. Locations of SafeStitch gastric plications. (Courtesy of SafeStitch)

FIGURE 5. SafeStitch device for endoluminal gastroplasty. (Courtesy of SafeStitch)

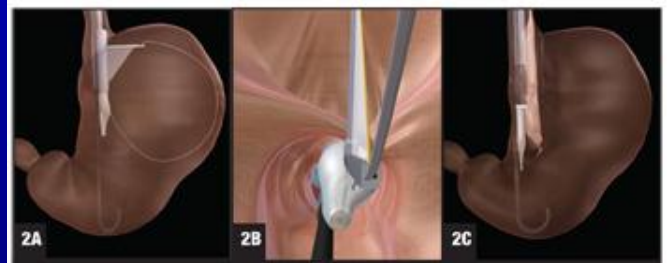
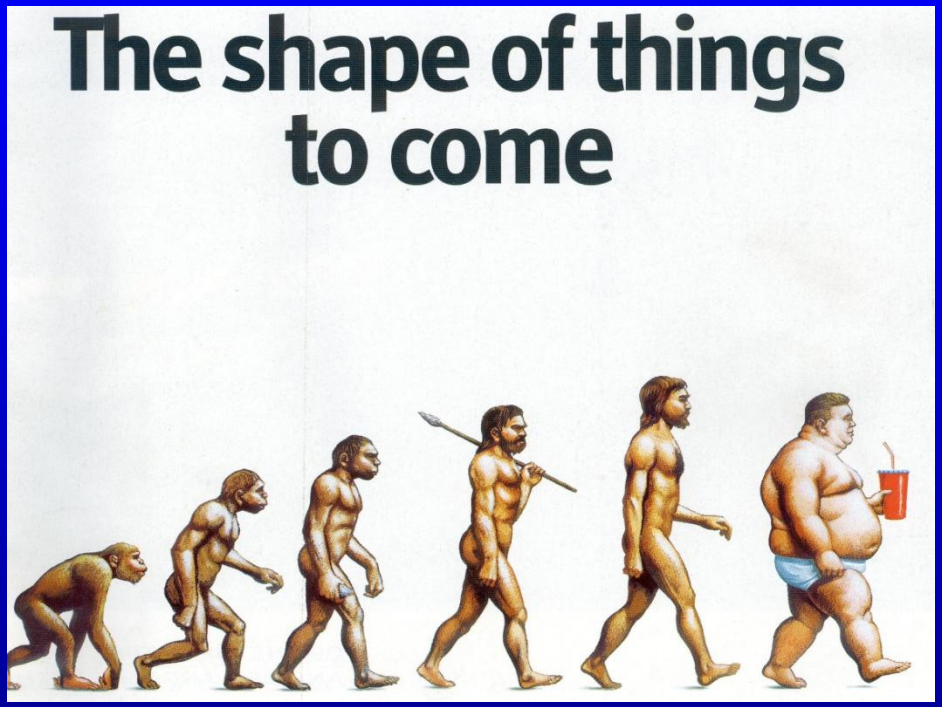


FIGURE 2A: Diagram depicting deployment of the TOGa™ system over-the-scope, with the endoscope retroflexed for viewing the procedure. 2B: Diagram illustrating retroflexed endoscopic view of the TOGa device gathering anterior and posterior gastric mucosa into the suction chamber prior to stapling. 2C: Diagram depicting formation of a stapled restrictive pouch along the lesser curvature with overlapping staple lines using the TOGa system.
Photographs used with permission of Satiety Inc.

The Obesity Management Program of the Future



Ultimately we have to stop selling cigarettes…….
But until then……

Role of Pediatricians

Palm Beach Children's Hospital
Adolescent Bariatric Center

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Separate indoctrinated beliefs from facts in your own head

"physician heal thy self"

Teach effective Authoritative Parenting Strategies

Effort-based, not goal oriented
choices and shared ownership with distinct boundaries
Earned praise
Dynamic Corrective Action Plans (OAC)

Educate families: **about carbohydrate toxicity**
balanced endorphin activation mechanisms

Stop promoting diet and exercise as weight loss strategies

Measures obesity and co-morbidity evolution in your patients

Refer at risk families for further education

Community activism

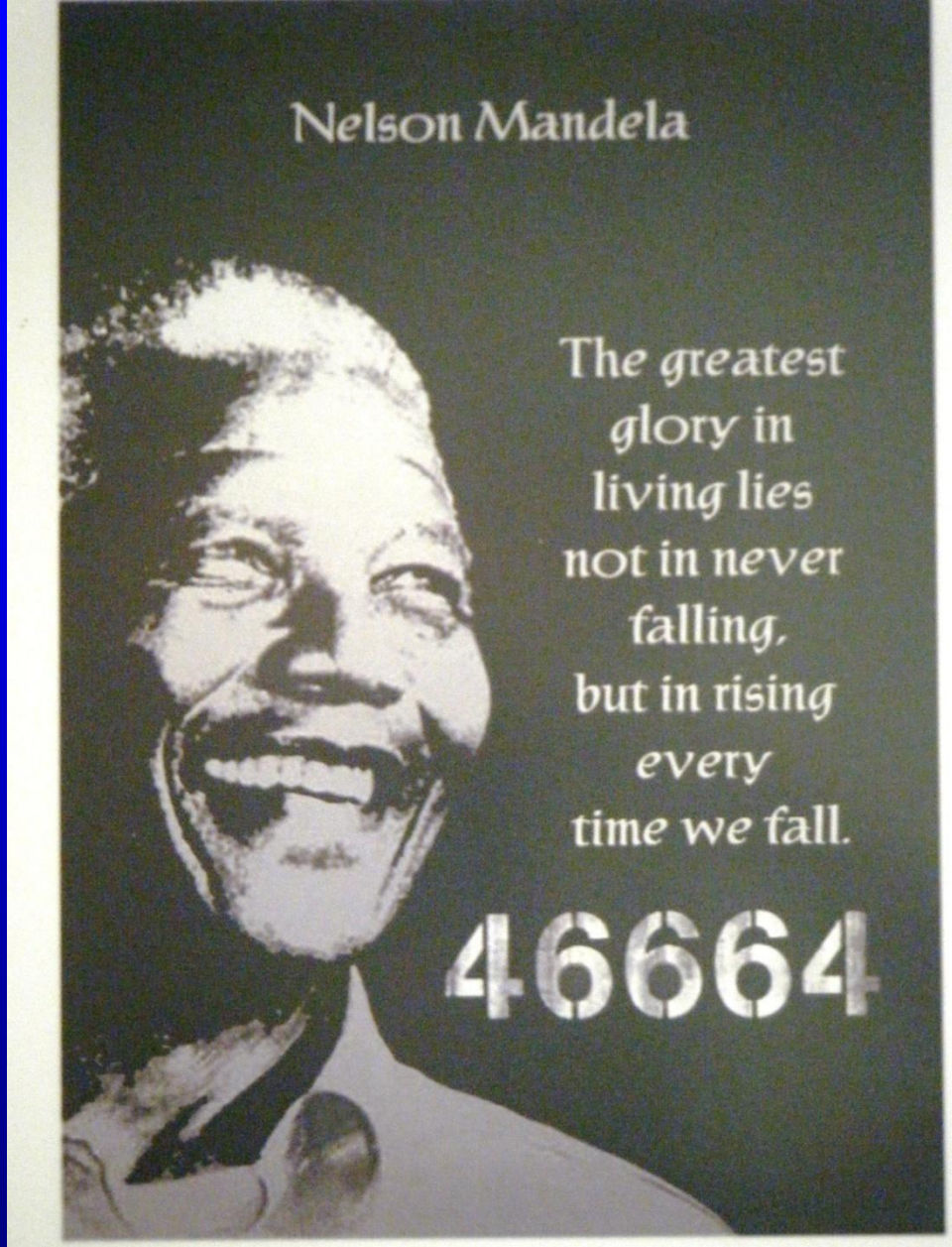
What floats her boat will determine how her boat floats

Palm Beach Children's Hospital
Adolescent Bariatric Center

Palm Beach Children's Hospital
Adolescent Bariatric Center

Palm Beach Children's Hospital
Adolescent Bariatric Center

THANK



Palm Beach Children's Hospital
Adolescent Bariatric Center

YOU

Palm Beach Children's Hospital
at St. Mary's Medical Center

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at St. Mary's Medical Center