

**Bringing Together Social Science and Medicine to
Study Youth Obesity's Causes, Consequences, and Solutions**

Presentation Summaries

February 27, 2009

Keynote Lecture: Michael Rosenbaum – “*Body Weight Regulation: Why it is so hard to keep weight off?*”

- Body weight is regulated – biological issue, not psychological
 - Regulated in the same way for both obese and lean individuals
 - Regulated by coordinate systems
 - Favor weight gain and resist sustained weight loss
 - Underlying biology should underlie prevention and treatment of obesity
 - Perception of what is ideal body fatness has changed over time, examples of Venus; personal perceptions of what people find wrong with themselves
- Evidence that body weight is regulated
 - Genetic influences on body fatness are the same as those of height
 - Long term constancy of body weight in adults
 - Lack of long term success of weight reduction plans in adults and children
 - What happens to your metabolism after you've lost weight
 - Identical twins always match on body fatness while fraternal twins are less likely to match, which provides more evidence
 - Body fatness is more heritable than other medical conditions
 - Percentage of women who sustain weight loss is very small
 - Antoine Lavoisier and the History of Bioenergetics
 - Guinea pig lost weight at the same rate as ice melted around the pig's cage
- Why defend body fatness? Increase Survival, increase ability for women to breastfeed, decrease fertility when food is scarce,
- Why defend thinness? Escape from predators, decrease the likelihood of adiposity-related morbidity (but people did not live long enough until recently)
- Metabolic effects of reduced weight maintenance on lean and obese individuals
 - Fat-free mass and calories/day needed to maintain weight is linearly increasing from thin to obese
 - When you lose weight you fall off the linear path and the number of calories needed to maintain weight is less than needed at heavier level, but more than needed by the people who were always in a thinner category
 - Changes in activity account for 89% of the changes in TEE (total energy expenditure)

- Body Systems effected by weight change: Skeletal muscle; autonomic; neuroendocrine; immune function; behavioral; neuronal
- Leptin Insufficiency: makes people look like weight reduced individuals (metabolically), but that they are fat. Leptin insufficient people will lose weight if they have leptin supplemented. Works through a threshold mechanism: Randomized trial of people with 10% weight reduction for 5 weeks, those with leptin consume ate fewer calories per meal and exerted more calories than those without.
- Subjects who lost weight recently are not much different than people who lost weight and maintained it for a longer period. This is why people always have to work on weight loss maintenance. Evidence that the caloric “set point” is lower for those who lose weight than those who maintain the same weight without weight loss.
- Why focus on children?
 - Reduce current and future morbidity
 - Great opportunities since it is preventative medicine, metabolic groundwork for adult degenerative disease laid in childhood, pediatric obesity constitutes an independent risk factor for adult morbidity
 - Unique research opportunities since diseases are present in childhood reflect in adult outcomes
 - Prevalence of BMI > 95thtile increase by 30-40% in last decade in toddlers
 - Increase in obesity and co-morbidities over time in pre-teens & teens (increased 10-20 fold in last decade amongst Mexican Americans); costs for caring for these people will rival costs for AIDS care in 10-20 years
- Why are we getting fatter?
 - Life is longer so we see co-morbidities; don't forage for food; less physical activity; traits we have selected for have become maladaptive.
 - More access to calorically dense, less healthful foods; sedentary lifestyle; older mothers; less sleep; better pre & post-natal care; increased time in thermo-neutral environments; less smoking; pharmaceuticals; aromatase inhibitors
- Biology meets sociology: what is really regulated?
 - Rank order of body fatness amongst your peers is regulated
 - Factors enabling obesity
 - Environment (enabler)
 - Genetics (susceptibility)
 - Family history good surrogate for genetic data
 - Physiology (“set point” can be modified upward)
 - Factors opposing weight loss
 - Physiological (“set point” can't be brought down)
 - Environment (success requires “reinvention” of self)
 - Genetic (Strong traits that were once adaptive)

- Your choices are your peers
- National Weight Control Study
 - Long-term lifestyle changes
 - Re-invent themselves
 - Recognize their friends may work against them
- Behavioral and education intervention is more likely than pharmacotherapy to work in obesity prevention
 - Identify risk
 - Learn about disease
 - Intervene early
 - Gym classes are biased against girls and overweight children
 - How does leptin differ from weight loss drugs
 - Drugs don't have sustained effects
- Prevention benefits everyone: Promote - lactation, ambulation, education
- Intervention Politics & community
 - School: remove vending machines selling soda and candy; improve lunch; mandate PE and health education
 - Community: safe parks; family education
 - Politics: raise awareness of policy makers to allot more funds for school health education and PE; Calorie tax is fine – how about healthful food tax breaks!
- Summary:
 - Social Scientists: add clinical and/or laboratory outcome variables to assess mechanism and effectiveness; prevention of disease is more behavioral but assessing the efficacy of the prevention is more medical
 - Medical Scientists: get help designing behavioral interventions; basic science of treatment is more medical but implementing diet and exercise interventions and assessing practicality are more behavioral
 - **Message received: Losing weight is easy → Sustained weight loss is hard**

Keynote Q&A:

- The different mechanisms of obesity by ethnic background, is there a relationship between these and visceral obesity?
 - These were looking at kids and the data is still coming in, but not yet analyzed.
- In short-run, how little weight loss is needed to see physiological effects
 - The studies currently are long-term with significant weight loss so there is no data on just small changes as these people are put through such rigorous regimens.

- Can the set point be ratcheted down for children, since they are still developing
 - Risk for obesity increases with age

Panel I: Mary J. Ward; Rogan Kersh; Stephen Cook; John Cawley

Mary J. Ward – Translational Research of Overweight Children:

- In children BMI is charted by age and gender
 - Youngest children have more weight per height than older children
- Discussed projects that are being worked on examining the effect of overweight on different body systems:
- Immunological function of NAFLD (non-alcoholic fatty liver disease)
 - NAFLD involves fatty deposits on the liver
 - Examine associations among oxidative stress markers, antioxidant reserve and inflammatory markers in children
- Vitamin D Deficiency and Atypical Glucose Metabolism
 - Vitamin D insufficiency is associated with insulin resistance, metabolic syndrome and Types I and II diabetes
- Angiogenic and Vasculogenic Markers in Overweight Children
 - Sprouting of new blood vessels from pre-existing ones is termed angiogenesis
 - Angiogenesis is tightly controlled by a balance of factors that stimulate endothelial cell growth
- Atypical Lipid Metabolism and Endothelial Dysfunction in overweight children
- Lower Extremity Alignment, Gait, and joint pathophysiology in overweight children
- Health for life primary care intervention
- Questions:
 - Is this research going to be included in future implementation NHANES & other data available to social researchers? (want to see what is already in the NHANES to see what analysis they can do that is consistent with their research)
 - When in this process do they want to involve social scientists? (ASAP)
 - When do they start measuring children?
 - 2 for BMI. But this may be already too late as there is so much change that occurs between birth and even the first six months of life that might indicate overweight risk for children. Stephen Cook: Clinical recommendations (CDC & APA) for pediatricians say that 85 percentile overweight for children and 95 percentile obese for children, but don't use the language when working with children and parents. Clinical recommendations also state that starting age 2 to measure children for BMI is accurate.

Rogan Kersh

- Little policy has officially focused on obesity
 - The bill that has moved the most on obesity and overweight is called the Personal Responsibility and Food Consumption Act, immunizes the food industry from law suits.
 - Too much lobbying by business going on to pass these bills

- Areas of most attention
 - Trans-fat – removing it from food doesn't make food any less caloric, and people eat more because there is less fear
 - Caloric labeling – In lower SES areas (AJPH forthcoming) caloric labeling make little or no difference in caloric intake, maybe even some increase. When you pair labeling with reminder about 2000 calorie reminders there is a slight decrease
 - School based interventions – sporadic in effect, implementation and sustainment. Call for systematic national action on this level.

- Where should policy go?
 - Lots of researchers have a wish list of what should be done
 - Went to policy makers with wish list of what they think would be feasible
 - 2 appeared as High impact-high feasibility:
 - Foods of Minimal Nutritional Value Policy (FMNV): foods that are of such low nutritional value that they shouldn't be served in schools – only 4 now: cotton candy, jelly beans, & 2 others. Failure because of lobbying by business. Now want to shift jurisdiction of agriculture to FDA and make FDA compile new list
 - Reformulation: chemically altering composition of food. Want to encourage these changes to make foods healthier without public knowing it as they tend not to want to eat foods that are healthier for them.
 - No new policy for increasing consumption of healthier foods
 - Lobbying is the most important factor in changing policy, but there is a remarkably small number of food/nutrition lobbies.

- Questions:
 - With the new composition of congress and with the new administration, would the list of feasible policies change at all?
 - This was done in a transition period, so hopefully it is captured in the list.
 - Any projected data about health care expenditure that relates to these policies?
 - There is a large debate about what the figure would be – average amount in medical expenditures due to obesity.
 - Tough because the pathways between obesity and healthcare utilization make this hard to get at in data.
 - Would getting different academy participation help change policy
 - Yes, and academies are already advocating changes but are not getting on the wagon to lobby for change.
 - Study at Cornell looking at labeling in cafeterias among students
 - 90% like the info; 90% don't use the info.
 - In “Menu” study – Group that saw prices only on a menu ate more after event than those who saw calorie intake and those who saw 2000 calorie daily reminder didn't eat anything extra after dinner.

Stephen Cook

- Youth consequences of obesity
 - Metabolic syndrome (glucose intolerance, high HDL, elevated blood pressure, etc):
 - Metabolic syndrome (MS) by increased smoke exposure
 - Increased Exposure to smoking had increased rate of teens with MS.
 - Also increase in center fat
 - Co-morbidities with cardio-metabolic syndrome
 - Polycystic ovarian syndrome – thought there was an association, but weight is not a big predictor of this in teenage girls.
 - Fatty liver – cardiovascular risk factors associated with fatty liver disease in children and adolescents.
- Greater Rochester Health Foundation
 - Found what steps are difficult for kids to change about unhealthy habits (including those associated with obesity).
 - Found what opportunities parents wanted for this kids. (Parents recognize that childhood obesity is bad).
 - Obesity rates highest in poorest areas of Rochester; these areas also have the highest rates of other health problems and risks.
 - Funding (for next 3 years): early childcare intervention; clinical outreach; advocacy; and suburban school projects; community champions; media/social marketing campaign.
 - Used Texas Obesity Policy Portfolio(2006) as template for HEALTHi Kids Policy Team
 - Want to develop and execute nutritional standards for schools and preschools, childcare centers, etc.
 - Create policies that support breastfeeding throughout the community.
 - Improve safety at parks and increasing access to recreations facilities.
 - Require K-12 students with moderately intense physical activity every day in school.

John Cawley – Economics of Obesity

- How economics is an appropriate framework to examine obesity - effects of obesity, choices given constraints
- Social Science measurement of obesity – BMI
 - BMI overstates obesity in African Americans
 - Timing of obesity epidemic varies by measure
 - Encouraging social science to get different measures of fatness
- Causes of Obesity
 - Income: negligible effect on weight of the elderly

- Food Advertising on childhood food consumption
- Consequences of obesity
 - Labor market outcomes, wages, employment, welfare to work, absenteeism, disability – effects greater for women than men,
 - Medical costs
 - Risky behaviors: dating, sexual activity, smoking initiation among teens
 - Skill attainment of young children (German; 2-3 yrs old)
- Prevention and Treatment:
 - Physical education classes (no effect on weight)
 - Financial rewards for weight loss (modest effects)
 - School based interventions (mixed)
 - Nutrition labels (effect on white females)
 - Demand for anti-obesity drugs
 - Deceptive advertising of over-the-counter weight loss products
 - Predicting complications after bariatric surgery
 - What predicts state legislative action on childhood obesity
 - Voters' willingness to pay for reduction in childhood obesity. (over 80% of NYers think childhood obesity is a problem, but have zero willingness to pay)
- How informed by other fields:
 - Causes
 - Genetics; Sociology
 - Consequences
 - Medicine; Sociology
 - Treatment
 - Psychology; Medicine
- What can others take away from economics:
 - Offers widely-accepted theoretical framework for human behavior (constrained maximization)
 - Clearly-defined rationales for policy intervention
 - Useful methods for estimating causal effect (exploiting natural experiments)
- Wants to learn:

- I don't know what I don't know – is there a mini-medical course on obesity.
- What I know I don't know:
 - What is the contribution of brain chemistry?
 - Can individual alleles/genes be exploited as natural experiments?
 - What are the true causal effects of obesity on specific aspects of health?
 - More information on psychology of delayed gratification/weight loss attempts.
 - What are you learning from ongoing interventions?
 - What can we learn from research on other risky behavior?
- Questions/Comments –
 - M. Rosenbaum - Use of BMI alone as obesity measure is very misleading, especially amongst children. Can use family history as a way of identifying how a family might spend their money as opposed to just what BMI is. (birth weight,
 - S. Cook - Practitioners always forget to re-ask family history as things change over time, which currently makes it hard to have available in data.
 - Electronic medical records will be key in the future analyses to social research as will include family history and other medical conditions
 - S. Cook – What effect does labeling people as having certain conditions in childhood have on adverse effects in later life outcomes, such as getting insurance later because of pre-existing conditions.

Panel II: Lisa Hudgins; Brian Wansink; Sahara Byrne

Lisa Hudgins –Risk factors for atherosclerosis in obese children

- Atherosclerosis risk factors dyslipidemia; glucose intolerance; hypertension
- How reversible is this and how do we slow progression?
- Studies:
 - Pathobiological determinants of atherosclerosis in youth study (PDAY)
 - 3000 autopsies after trauma for age 15-34; all had fatty deposits in aortas
 - From age 15 fatty streaks and raised lesions increase dramatically; young people arteries start looking like elderly arteries
 - Differences in vascular compliance in pediatric patients at risk for cardiovascular disease as measured by endo-APT technology (Rubin Cooper MD)
 - Age 8-18 (20 per age group): Health controls, overweight, high cholesterol and/or triglycerides; fatty liver
 - Baseline, 6 mo, 12 mo: Endo-PAT test; carotid artery wall thickness by ultrasounds; fasting blood sample
- Does sugar makes us fat?
 - Major sources of calories as high-fructose corn syrup (HFCS) & sugar
 - Over time percentage of desserts have gone from all sugar added to increased HFCS; drinks & soda consumption has become only HFCS
- Nutritional studies
 - Dietary Fructose does not acutely raise glucose or insulin; raises plasma triglycerides
 - De Novo Lipogenesis has large spike immediately after HFCS consumption with a linear drop off after 10 hours, but there is no such spike with glucose.
 - Positive relationship between fasting glucose/insulin and risk of diabetes.
 - Dyslipidemia associated with obesity is readily corrected by modifications in diet and physical activity.
 - Equicaloric substitution of fat with sugar does not increase body fat. Substitution of fat with sugar, fructose more than glucose causes dyslipidemia by increasing the production of fat from sugar in the liver

Brian Wansink – Experiments to uncover unconscious behavior

- Criteria for experiments
 - Real problem; Relevant to food/health; Actionable; Best method; Best journal
 - Example: cough medicine dosages & kids:
 - 70% use spoons
 - Does spoon size bias dosage (tsp v. tbsp)

- Why? When?
 - Results: if using a table spoon, parents over-pour medicine for selves and even more if the child is with them. 60% difference in over-pouring is explained by kid crying/screaming.
- Other interesting questions:
 - What environmental cues induce *Mindless Eating*?
 - How do we know when we are sated
 - What tricks us (and kids) into overeating or worse?
 - What biases our taste?
 - How do parents influence eating habits?
- Unforeseen benefits from cross-disciplinary research
 - Most theories in consumer behavior and psychology are overly nuanced
 - Interdisciplinary research offers wider options – consistent results, new important inspired theory vs. new, inspired, important results with consistent theory
 - New horizons, new friends, new influence
 - What value-added is your 21st article in an old field vs. 1st in a new field.
- New questions want to join others to answer
 - BMI Brothers – how two siblings have different BMIs
 - Hidden Persuaders – what do parents unknowingly do to influence children’s eating behavior at different time (when parent not around)
 - Baby buffet – does wide exposure at childhood lead to wider/narrower preferences in later life
 - SmarterLunchrooms.org - how can get nudge better lunchroom decisions
 - Food Stylizing – why does high-end culinary convention imply meat forward, odd numbers, height not width? Can we use this to trick kids into eating healthier?
- Questions:
 - What can help us with school lunches?
 - Some evidence: Does limit on parents money for food change consumption (can use father’s money on healthy food; own money on bad food) – doesn’t change school income; but alters decision (students don’t feel bad about not being able to consume bad food).
 - M. Rosenbaum – do you notice any making up for decreased calorie intake a few days later?
 - Experiments are very short in duration, but good future directions.

Sahara Byrne – The boomerang Effect – Explaining and avoiding resistance to health messages

- When and why do health messages backfire?
 - Health messages – Prediction
 - Prevent or reduce unhealthy behavior
 - Change attitudes toward target/behavior
 - Enhance health/prevent behavior
 - Increase awareness of medical options
 - Strategic messages
 - Clear, well defined “intended” effect
 - 3 possible outcomes
 - Intended effect; no effect; unintended effect (possibly opposite)
 - Patterns of boomerang effect
 - Advertising
 - Entertainment-education – efforts to reduce negative effect of media
 - Theoretical explanation
 - Unintended constructs vs. intended constructs:
 - Intended elements (leads to healthy behavior): fast food unhealthy → eating healthy makes you stronger → boomerang: resistance
 - Unintended elements (leads to unhealthy behavior): visual depict as examples during intervention → boomerang: priming (see picture of burger in bad food message and want burger)
 - Avoiding Resistance
 - Turn processing resources toward intended elements
 - Avoid unintended elements – often leads to watered down messages
- Questions:
 - Have done anything with amount of time since the administration of message?
 - Declining impact over time of short-term interventions; there may also be delayed effects of interventions that may not be immediately evident.
 - For Rochester Foundation: Kids learn the jingle but don’t know what it means.
 - May not know what their specific target audience is.

Panel III: Peter Trozilli; David Levitsky; Susanna Cunningham-Rundles

Peter Trozilli – Osteoarthritis and Obesity

- Is children's obesity a risk factor for Osteoarthritis (OA)?
 - Arthritis is the #1 limiting disability among Americans and a leading cause of absenteeism.
- Activity limitation from arthritis in USA
 - Highest among older segment of population
- Ten year olds with BMI>30 have hip and knee OA, but not really both
- Lifetime risk of symptomatic knee OA
 - Risk increased with higher BMI (66% risk among obese)
 - Knee OA, Body weight & joint alignment
 - Progression of knee OA via joint space narrowing – w/ increasing BMI there is a increased in malaligned knees; but which comes first
 - 8% increase in risk of progression to OA with every 2-unit increase in BMI.
- Childhood orthopedic disease linked to obesity
- Orthopedic complaints: new pain (more in overweight);
- Tibial growth plate (overweight>non) and lower extremity alignment (femoral-tibial alignment – no results)
- Surgical options for correcting malalignment -stapling
- Overloaded knee on one side in overweight children
- Study of role of joint malalignment and BMI being started
- Questions –
 - S. Cook - How much of OA is this due to vitamin D deficiency and how much due to obesity?
 - Not sure yet.
 - J. Cawley - How confident that you're measuring the causal effect of obesity and how much due to genetics?
 - Results probably confounded. No clear evidence
 - Is there a difference in recovery from fractures in obese patients?
 - Children grow so fast it is hard to measure.
 - There may not be any difference in bone density between obese & non-obese.

David Levitsky

- What accounts for Freshman 15?

- Eating in dining halls & snacking after dinner were primary explanations of variation.
 - There is probably an alcohol effect, but it is unmeasured.
 - This is a mostly eating effect, not an income effect.
- In an experiment where a group of students weighed themselves daily and a group who were weighed at beginning and end found that those who weighed themselves daily gained no weight while other group gained a few pounds.
- People in the daily scale group changed their long-term caloric intake when they say increases in the slope of their body composition. There was also an effect the control group, though not as large.
- Treatment for obesity is consuming less food, but this conflicts with the food industry.
- **Feedback to people is needed so that people know how their decisions impact them.**
- Questions
 - What was follow up on the freshmen 15?
 - There was none. But want to know what helps people sustain weight loss
 - Could be used to develop a web-based weight reduction program.
 - Is daily feedback the right way to go? What do you think the appropriate measurement period is?
 - M. Rosenbaum – Having direct interaction with someone in weight measurement helps sustain weight loss.

Susanna Cunningham-Rundles – Role of inflammatory response and oxidative stress in fatty liver disease in obese children.

- Goal to combine investigation with analysis.
- NAFLD is increasing in children; obesity associated with increased inflammatory immune response and increased leukocytes.
- Aims:
 - Determining the significance of dysregulated inflammatory cytokine response, altered immune cell subsets, etc.
 - Correlate biological markers of inflammation with liver function and non invasive detection of fat in liver.
- Have pilot study of 16 patients, 13-17
- Problems with study
 - Obesity on BMI, no body composition
 - Limited diet history
 - Limited discussion of diet and exercise
 - Treated recommendation limited to Vitamin E
 - Lack of follow up
- Found differing results by obese children with and without NAFLD.
- Next study with dietary intervention with Amino-fatty acids.

- Questions/Comments:
 - Can you induce fatty liver? – Yes.
 - Are there thin kids who have fatty liver? - Yes. (see autopsy study)
 - S. Cook – Fatty liver looks more malignant in adults than in children

Panel IV: Kathy Rasmussen; Gladys Strain; Jeffery Sobal

Kathy Rasmussen – link between maternal obesity at conception and infant obesity at age 1

- When mothers are too heavy their babies are heavier at birth
- The household food environment that will effect both the mother and child
- Poor breastfeeding → use formula → may overfeed baby
 - Bottle feeding leads to earlier introduction to solid foods which will effect children
 - Biological, mechanical and psychosocial factors influence poor breastfeeding
 - The heavier a woman is the sooner she stops breastfeeding.
- What is the exact relationship between with breastfeeding and obesity
 - Biological – differing mammary gland development among obese women; it is harder to nurse discretely because more weight all over
 - Psychosocial – obese women have less self-efficacy (limited evidence)
- Giving women social support and breast pumps has had limited effect on prompting obese women to breastfeed and continue to do so.
- Serious concern, important for babies (nutrients) and mother (helps in baby-weight loss)
- Needs help understanding what causes developmental abnormalities in mammary gland? Does it matter when in mother's life-cycle obesity spell occurs?
- Questions\Comments –
 - What are characteristics of these women?
 - Does obese lead to early delivery? – None, observed in data.
 - For SGA (small for gestational age) babies will develop co-morbidities sooner
 - What about women who gain large amounts of weight during pregnancy?
 - Those who over- or under-gain the recommended pregnancy weight gain tend to under-breastfeed babies.
 - What are outcomes for women who failed to lactate w/ previous births?
 - Those women are much less likely to breastfeed because they already used formula.
 - What sort of impact will new WIC guidelines (increase in food) have on breastfeeding?

- Trivial, the increase is small.
- An important aspect of WIC is the fruits and vegetables provided in the food options. Shows that women will buy fresh produce over frozen with WIC (and food stamps?)

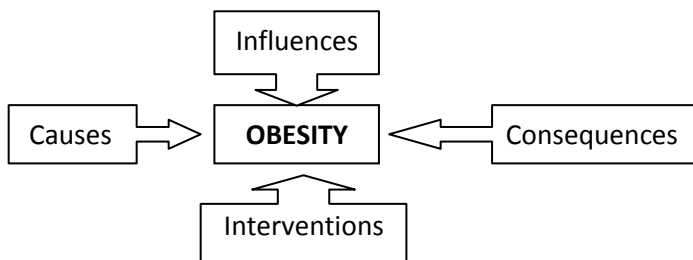
Gladys Strain – Bariatric Surgery

- Not much bariatric surgery among youth, but should be considered as a treatment option for youth. There is a multidisciplinary team that evaluates patients for bariatric surgery.
 - I.e. ophthalmologist interested if weight loss helps heal retinal eye disturbances that results from diabetes.
- Longitudinal Assessment of Bariatric Surgery (LABS) – 10 surgical centers selected, nationally.
 - Also have Teen LABS, bariatric surgery for adolescents 13-17 (at 4 centers)
- Endocrinologist versus surgeon for diabetes
 - Endocrinologists are hesitant to refer patients for bariatric procedures to help with their diabetes, even though there is evidence that surgery can reverse diabetes.
- Surgical referral of adolescents
 - Hesitance to refer children for bariatric procedures, some feel it is not appropriate.
 - These children have worse cognitive development and may stop attending school, so this could get them back into school and help their development.
- Surgery is effective but would like to work towards prevention to avoid treatment.
- Criteria for bariatric surgery (adolescents)
 - Have failed 6 months of organized weight management
 - Have attained or nearly attained physiological maturity
 - Severely obese (BMI>40 w/ co-morbidities; 50 without)
 - Demonstrate a commitment to medical and psychological evaluations both before and after surgery.
 - Agree to avoid pregnancy for at least one year prospectively
 - Be capable of and willing to adhere to nutritional guidelines
 - Provide informed assent to surgical treatment
 - Demonstrate decisional capacity.
 - Have a supportive family environment.
- Recommendations
 - Intervention should be adjusted to individual needs with respect to maturity level and severity of co-morbidities
 - A multi-disciplinary team should consider indications, contradictions, risks, and benefits of bariatric surgery for individual patients.

- Patients and their families need to realize this is not a cure for obesity and that need to comply with dietary and physical activity regimens.
- Known risks and possible side effect of surgical procedures should be reviewed so that patients and family can participate in decision making
- Adolescent bariatric surgery should be performed one at facilities capable of treating adolescents with complications of severe obesity.
- Questions/comments –
 - Promote bypass or lap-banding for adolescents?
 - Lap bands not as effect as bypass.
 - It appears that some patients do not get appropriate follow up care as these patients are showing up in co-op extension program nutrition centers.

Jeffery Sobal – Social Science and Biomedical Science – Analyses of Obesity

- Contextual Analysis [Sobal & Devine]



- Biopsychosocial Model: Hierarchy of Systems [Engel]
 - Biosphere → (social) → person → (biological) → molecules
 - Life sciences → physical sciences
- Level of analysis and systems [Sobal]
 - Hard time bridging social level of analysis (hierarchy of control) and physical level of analysis (hierarchy of determination)
- Direction of causality between SES and obesity
 - Social causation
 - Low SES → stress → overeat/inactive
 - High SES → restraint → diet/active
 - Social selection
 - Obesity → stigma, discrimination, prejudice, prevent mobility
 - Mechanisms for the social causation of obesity by SES

- Education, income occupation → eating, smoking, activity → obesity
 - Mechanisms of social selection more complex.
- Need collaborative models
 - Disciplinary; multidisciplinary; and interdisciplinary
- Questions/comments
 - S. Cook – Junior-faculty and fellows appear to be bridging people. Maybe should include junior faculty and fellows into this research will help interdisciplinary work.
 - Why do people eat what they eat? Who gives it to them? Where did they learn to eat certain things? How hard would it be to change eating habits?
 - Would require an in-depth community study.