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INTEGRATED HEALTH MAIN SESSION ABSTRACTS

IH-101

INCREASED DIET-INDUCED THERMOGENSIS AFTER ROUX-Y GASTRIC BYPASS

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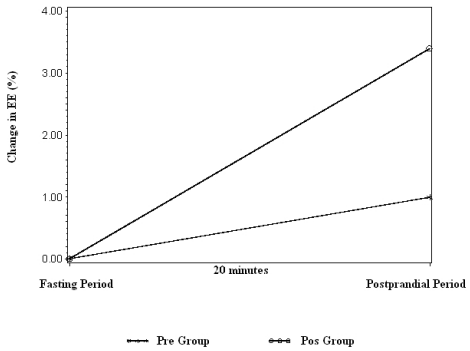
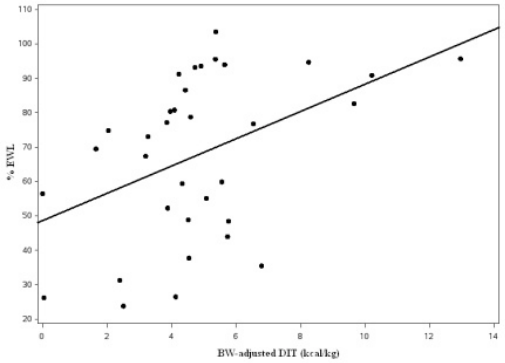
Background: : Roux-Y Gastric Bypass(RYGBP)is an effective tool for long-term weight loss success. Mechanisms underlying the effectiveness of the surgery may not only result from the anatomy of the procedure but also from favorable changes in energy metabolism. In the present study we have examined 1) basal energy expenditure (BEE), 2)diet-induced thermogenesis(DIT) and 3)fuel utilization, as assessed by the respiratory quotient(RQ), among a control group and post-RYGBP patients.
Methods: The study was cross-sectional and included 35 controls and 34 RYGBP patients who were at least 1 year post-operative. Anthropometrics(height,weight) were determined for both groups, and BEE and RQ were measured using indirect calorimetry following a 12 hour fast. Patients then received a standard meal and DIT was determined. BEE and DIT were expressed per kg of body weight(BW). This study was registered in clinical trials (#NCT01396460).
Results: BEE/kg BW and RQ did not differ between the Control and RYGBP patients. However, RYGBP DIT values, whether absolute or BW-adjusted, were > 200% those of the controls ($p<0.0001$). DIT/kg BW values of the RYGBP patients were significantly correlated to excess weight loss percentage ($p=0.0097$).Postprandial RQ among the RYGBP patients was also significantly ($p<0.0001$) higher than for their respective controls, suggesting an increased use of carbohydrates.
Conclusion: Postprandial changes in energy expenditure and fuel utilization may contribute, in part, to the weight loss effectiveness of the RYGBP procedure.



Changes of value in EE (Energy Expenditure) from fasting to postprandial period (DIT). Time interval: 20 minutes($p < 0.0001$)



Correlation between Body Weight (BW) adjusted Diet-induced thermogenesis (DIT) and Excess Weight Loss Percentage (EWL%),($p = 0.0097$)

IH-102

RHEOSTAT (REACTIVE HYPOGLYCAEMIA EXAMINATION OF SYMPTOM STATISTICS): A TOOL FOR SCORING AND INVESTIGATING HYPOGLYCAEMIA FOLLOWING GASTRIC BYPASS

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Background: Roux-en-Y gastric bypass (RYGB) is a superb treatment for morbid obesity, particularly type 2 diabetes. Surgeons are becoming aware of RYGB patients who develop hypoglycaemia a number of hours following eating (reactive hypoglycaemia-RH). In some cases there are disabling neuroglycopaenic symptoms. These symptoms need to be differentiated from dumping. Furthermore, some patients develop nesidioblastosis necessitating pancreatectomy. The cause of RH and true incidence of RH is unclear.
Methods: RHeoSat was devised to diagnose the likelihood and severity of RH. RHeoStat was delivered online to members of a national weight loss support group.
Results: 47 patients were scored (80% female). Only 9% of patients were on diabetic medication. Mean age, preop weight and weight lost were 47, 140kg and 58kg respectively. Predominant hypoglycaemic symptoms were sweats and palpitations (77% and 81%) with 40% presenting with neuroglycopaenic confusion or faints. To exclude dumping, symptoms scoring by time of onset in relation to food (>60minutes) and surgery (>one year) revealed 57% had symptoms highly suggestive of RH. Furthermore 33% of these had documented hypoglycaemia (mean BM 2.9). Only 3 patients (6%) had been given a provisional diagnosis of RH by their physicians.
Conclusion: RHeoStat is a simple test that can be delivered online. It can be used to identify patients with RH and differentiate dumping. Symptoms of RH appear to be more common than suggested in the literature. Further work is needed to refine the scoring system. Wider implementation will allow a more accurate estimation of the true incidence of RH following bariatric surgery.

IH-103

CHARACTERISTICS OF CHILDHOOD FEEDING PRACTICES BEFORE AND AFTER BARIATRIC SURGERY

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Background: There is a noteworthy lack of information on the effect of bariatric surgery on the home food environment and the impact one individual changing eating behavior influencing the behavior of others, particularly children. This study was designed to assess family feeding practices before and after a mother underwent bariatric surgery.
Methods: Prior to surgery, 41 mothers (mean age 38 ± 8.9 years) of at least one child between the ages of 2 and 16 completed the revised Child Feeding Questionnaire, the Comprehensive Feeding Practices Questionnaire, the Eating Inventory, the Fat Preference Questionnaire, and a shelf inventory which assessed foods currently in the home. Twenty one of these women also completed these measures postoperatively. A second group of 23 mothers (mean age 44 ± 7.8 years) who had undergone bariatric surgery within the past 6 to 12 months also completed the measures.
Results: Women who had undergone surgery reported greater cognitive restraint and lower disinhibition as compared to those assessed prior to surgery. There were few differences in child feeding practices between women awaiting surgery and those who had undergone surgery. Women who had undergone surgery endorsed more frequent grocery shopping as well as more frequent purchases of poultry and seafood and less frequent purchases of baked goods, crackers and chips. Women who had undergone surgery also reported more frequent modeling of heathy eating behaviors.

Conclusion: This preliminary study suggests that women who have undergone bariatric surgery make some positive changes to the food they bring into the home, their own eating behavior, and child feeding practices. The behavioral changes required of bariatric surgery may represent a 'teachable moment' for mothers who then can make positive changes to family eating behavior.

IH-104

THE IMPACT OF A CLINICAL PHARMACY CONSULTING SERVICE ON THE BARIATRIC SURGERY PATIENT POPULATION

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Background: Patients who undergo bariatric surgery frequently experience drug-drug and drug-disease

interactions that impact essential components of drug absorption, distribution and metabolism in the post-surgical period. This study was developed to evaluate the impact a clinical pharmacy consulting service can have on preventing these potential complications and therapeutic failures.
Methods: A retrospective chart review of patients who received pre-operative bariatric surgery consults performed by clinical pharmacists was reviewed from the time period dating April 2011 through September 2011. Data collection was approved by the Institutional Review Board. Data collected included the total number of pharmacist interventions, which were then stratified by type.
Results: From April 2011 through September 2011 ninety-six patients received a clinical pharmacy consult. A total of 410 medication interventions were made, with an average of 4.3 interventions per patient. Interventions were stratified into the following categories: conversion of extended release to immediate release medications (7.8%), dosage form adjustment (20%), recommendation to hold the medication post-operatively (45%), recommendation for increased monitoring post-operatively (15%), switching to a clinically superior medication based on available evidence (5.8%), and miscellaneous recommendations (4.1%). The average number of medications for each patient pre- and post-consult was 8.5 and 6.5 respectively.
Conclusion: Clinical pharmacy intervention in the bariatric surgery patient fulfills an unmet need in the comprehensive care of the patient and can have a meaningful impact on the patient's medication regimen, potentially preventing medication complications and therapeutic failures.

IH-105

BEST PRACTICES THAT RESULT IN INCREASED PROFITABILITY AND PERFORMANCE

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Background: Our bariatric program has developed a system using metric based conversions to monitor productivity and performance ensuring goals and outcomes are met to increase volume, process efficiency and patient, surgeon, and employee satisfaction.
Methods: 1. Track conversion data from each employee and account for external factors to fill in overall program conversion metrics. 2. Data is aggregated into a program funnel, which compares current conversions to a baseline previously established to measure increases or decreases in performance. Comparing current data to the baseline allows you to see trends and identify areas of opportunity. 3. This data allows you to set realistic goals for each step in the process. 4. Analyzing key metrics from each employee to monitor the performance of the program, as it relates to other factors, helps accurately predict the expected growth of the program and quickly identify and address opportunities for improvement.
Results: Accountability shifted from program management to employees resulting in improved productivity and increased job satisfaction. Administrators experienced a decrease in staff performance insurances and turnover. Employees experience an increase in motivation and morale through timely recognition and reward. Patients experience more efficient processing with decreased time from seminar to surgery resulting in improved satisfaction and program referral. The program's surgical volume continues to increase; as well as, patient access to quality care with exceptional outcomes.
Conclusion: Opportunities for improvement become clear when objective data is the foundation of your decisions. Our surgeons, hospital, patient, and employee satisfaction levels have significantly improved. We have seen an increase of our overall conversion rate by 37% resulting in increasing profitability and productivity.

IH-106

LONGITUDINAL ASSESSMENT OF BARIATRIC SURGERY (LABS): RETENTION STRATEGY AND RESULTS AT 24 MONTHS

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9. Epidemiology Data Center, University of Pittsburgh, Pittsburgh, PA, USA

Background: Retaining participants in longitudinal studies of bariatric surgery is difficult and strategies for following participants in such studies are not commonly published. However, retention is critical because it affects interpretation and generalizability of results.
Methods: LABS-2 is an observational cohort study of 2458 adults enrolled prior to bariatric surgery at 10 centers within the United States. Experienced researchers and clinicians developed several retention strategies including flexible scheduling, a call protocol, reminder letters and abbreviated visit options. Other strategies include: honorarium and travel reimbursement, providing progress/laboratory results, newsletters, study website and retention surveys. Strategies for locating participants include: frequent update of contact information, contacting PCPs and emergency contacts, sending registered letters, and searching public-records and Internet databases.
Results: At 12 and 24 months, 2426 and 2405 participants remained active, with vital status known for 99% and 98%, at least weight for 96% and 94% respectively. There were 148 missed visits (6%) at 24 months, the most common reason (63%) being inability to locate or reach the participant. Only 15 (0.6%) participants active at 24-months missed all follow-up visits. Though 42 participants could not be located or contacted at 6 months, data were obtained for 23 (55%) at 12 months, and of the 52 participants who could not be located or contacted at 12 months; data were obtained for 18 (35%) at 24 months.
Conclusion: LABS retention is superior to many published reports, but requires considerable effort and resources. Missing a visit does not mean "lost to follow-up". Further research is needed to identify the efficacy and cost effectiveness of retention strategies.

IH-107

ALCOHOL PROBLEMS BEFORE AND IN THE FIRST TWO YEARS FOLLOWING BARIATRIC SURGERY

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4. Surgery, University of Pittsburgh Medical Center, Pittsburgh, PA, USA
5. Neuropsychiatric Research Institute, Fargo, ND, USA
6. Surgery, Brody School of Medicine, East Carolina University, Greenville, NC, USA
7. Division of Digestive Diseases and Nutrition, National Institute of Diabetes and Digestive and Kidney Disease, Bethesda, MD, USA

Background: Clinical reports have highlighted the onset or recurrence of alcohol problems after bariatric surgery, but prospective data are lacking.
Methods: The Longitudinal Assessment of Bariatric Surgery-2 is a 10-center cohort study of adults who underwent bariatric surgery. Past year alcohol use was measured with the Alcohol Use Disorders Identification Test (AUDIT). Of 2458 participants, 1945 completed the AUDIT pre-surgery and 1 yr and/or 2 yrs post-surgery. Generalized linear mixed models tested for differences in alcohol problems (i.e., AUDIT score ≥8, indication of 'alcohol-related harm' or 'alcohol dependence') over time and determined predictors of post-surgery alcohol problems.
Results: The percentage of participants (78.8% female, 87.0% white, median age=47 yrs, body mass index=45.8 kg/m^2) with a past year alcohol problem was significantly higher at 2 yrs (9.6%; p<.01) compared to pre-surgery (7.6%) and 1 yr (7.2%). One in eight (12.0%) participants had alcohol problems within 2 yrs post-surgery, 39.5% of whom had problems pre-surgery. Alcohol problems (OR=18.6; p<.01), illegal drug use (OR=2.4; p<.01), lower Interpersonal Support Evaluation List 'belonging' score (OR=.92; p<.01), household income ≥$100,000 (OR=1.9; ref.=<$25,000; p=.03), male sex (OR=2.0; p<.01), and younger age (OR=.63 per 10 years; p<.01) at pre-op, and having a Roux-en-Y gastric bypass (OR=2.0; ref.=adjustable gastric band; p<.01), were independently related to increased odds of alcohol problems at 1 yr and 2 yrs. The odds of an alcohol problem at 2 yrs compared to 1 yr was 1.6 (p<.01).
Conclusion: More participants reported alcohol problems in the 2nd year after surgery compared to before surgery. Pre-surgery alcohol problems increased the odds of post-surgery problems.

However, over half of participants with post-surgery alcohol problems did not have pre-surgery problems.

IH-108

FOOD ADDICTION DEBATE: MYTH OR REALITY?

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Background: The evidence for food's addictive properties is steadily growing. Much as classic drugs of abuse "hijack" the brain, accumulating evidence with food suggests a similar impact…" (Gearhardt, Ashley N; Corbin, William R; Brownell, Kelly D., 2009.)
Overeating shares many characteristics with substance use disorders and has been characterized as an addiction, most likely arising from a combination of abnormal cognitive and neuroendocrine processes. (Joranby, Lantie; Pineda, Kimberly Frost; Gold, Mark S., 2005).
Neurological studies confirm that both addiction and obesity patients have a deficiency of dopamine receptors. (Riva, Giuseppe; Bacchetta, Monica; Cesa, Gianluca; Conti, Sara; Castelnuovo, Gianluca; Mantovani, Fabrizia; Molinari, Enrico, 2006).
The results from many studies suggest that multiple but similar brain circuits are disrupted in obesity and drug addiction... (Wang, Gene-Jack; Volkow, Nora D; Thanos, Panayotis K; Fowler, Joanna S., 2009.)
"Sugar, as common as it is, nonetheless meets many of the criteria for a substance of abuse and may be addictive for some individuals when consumed in a 'binge-like' manner." (Avena, N.M., Rada, P., Hoebel B.G., 2007.)
This conclusion is reinforced by the changes in limbic system neurochemistry that are similar for drugs and for sugar."61 The presentation will illustrate the similarities between food as an addictive substance and addiction to classic drugs of abuse. Ideas for the psychological treatment of post-surgical weight loss patients in light of this awareness will be discussed.

IH-109

PREOPERATIVE BARIATRIC SURGERY PATIENT RETENTION

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Background: Once a patient does reach out to a bariatric program, retention is an extremely important aspect to be evaluated. Actively making modifications within the bariatric program to improve patient retention and ultimately getting them to surgery is very important to helping more morbidly obese patients, thereby improving the health status of the patients served by the bariatric program.
Methods: We have chosen to use participatory action research using our multidisciplinary bariatric team to actively assess, plan, and implement changes, and reassess our bariatric program's patient retention rate. Participants actively examined percentage of patient retained from the point of initial contact through to bariatric surgery. We analyzed retrospective data from September 2010 to August 2011.
Results: During the study period, there were a total of 1,074 telephone inquiries, 881 seminar registrations, 621 seminar attendees, 443 initial surgeon consultations, and 337 primary bariatric surgeries. Comparing the first to the last quarter, we observed an increase of 22 surgeries, or a 29% increase of surgeries.
Conclusion: The research identified numerous areas to further investigate within the preoperative phase to retain bariatric surgery candidates. A direct result of the participatory action research was implementation of several changes in our processes throughout the year. As a result of these several initiatives, our bariatric surgical volume had increased by 29 percent, despite the overall bariatric surgery volume decreasing 10-20 percent nationally.

IH-110

USE OF WEB-BASED PROGRAMS FOR BARIATRIC PATIENT EDUCATION, PARTICIPATION, AND PUBLIC EDUCATION

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Background: Innovation and technology is changing the landscape on how we market the patient, perform surgery and provide long-term follow-up care. In this report we describe how web-based bariatric programs reduce expenses, improve patient knowledge and adherence, and increase public awareness of surgery and the services of our center.
Methods: Web-based bariatric programs for public information session, pre- and postoperative patient education, and support were established. The cost-effectiveness of the web-based programs,

improvement in patient participation, and information session attendees were examined prior to and following initiation of these web-based technologies.
Results: Online education and support group programs had a one-time cost of $18,000 but saved over $35,150 in personnel costs in the year following initiation of the programs. Online education improved education training scores ($p<0.01$) and increased significantly the number of monthly support group attendees ($X2<0.05$). The percentage of individuals attending support group in association with the web averaged 33%.
Conclusion: Web-based bariatric programs are cost-effective, increase patient knowledge and participation, and increase numbers of potential bariatric candidates.