

Thursday November 5 – 6:00PM-7:30PM**T-P-LB-3816**

A comparative effectiveness study of Brighter Bites: a school-based food co-op to improve access to fruits and vegetables and nutrition education among low-income children and their families.

Shreela Sharma *Houston Texas*, Christine Markham *Houston TX*, Joanne Chow *Houston Texas*, Michael Pomeroy *Houston TEXAS*, Margaret Raber *Houston Texas*

Background: Brighter Bites (BB) is a 16-week school-based food co-op intervention comprising: 1) Weekly distribution of fresh produce (50 servings) from food banks distributed by engaging parent volunteers; 2) Nutrition education using Coordinated Approach To Child Health (CATCH) in schools, plus parent nutrition handbooks and recipe cards; and 3) Weekly healthy recipe tastings. We evaluated the effectiveness of BB to increase fruit and vegetable intake, and home nutrition environment among low-income 1st graders. **Methods:** In a non-randomized controlled comparative effectiveness trial (2013-2015), six schools received BB intervention (n=406 parent-child dyads); six schools implemented CATCH-only (n=310 parent-child dyads) in Houston, Texas. Data were collected at baseline, midpoint, and end of 16-week intervention. Measurements included child height, weight; and parent-reported socio-demographic, home nutrition environment surveys, and food frequency questionnaires. Growth curve modeling was used to evaluate change over the three time-points for fruit and vegetable intake and home nutrition environment adjusting for covariates. **Results:** At baseline, the sample was 71% Hispanic, 24% African American; 42.7% of 1st graders were overweight/obese. As compared to CATCH-only, results showed significant increases pre-to-post BB intervention for fruit servings (p=0.048), and from baseline to midpoint for vegetable servings (p=0.002) consumed by the child. Home environment showed significant increases in frequency of cooking (p=0.013), rules regarding limiting portion sizes (p=0.013) and sugary beverages (p=0.040), family dinners (p=0.012), serving fruits (p=0.003) and vegetables (p=0.025) at meals, and decreased frequency of serving sugary cereals (p=0.029). Parents reported increased understanding (p=0.006) and usage (p=0.030) of nutrition facts tables to make food purchases. **Conclusions:** By engaging local food banks, schools and parents, BB improves dietary behaviors and home environment of low-income children.

T-P-LB-3817**Comparing methods of targeting obesity interventions in populations: an agent-based simulation**

Rahmatollah Beheshti *Baltimore Maryland*, Mehdi Jalalpour *Cleveland Ohio*, Takeru Igusa *Baltimore MD*, Claudia Nau *Baltimore Maryland*, Thomas Glass *Baltimore Maryland*

Background: Policy makers and researchers wishing to test or deploy an obesity intervention face the challenge of where to focus resources. Traditional targeting strategies include random selection, at-risk communities, or at-risk individuals. We use an agent-based model (ABM) to simulate intervention effectiveness comparing these approaches to targeting based on social network structure. **Methods:** Using an ABM, we synthesize a population in two connected environments with low and high access to healthy food. Agents form scale-free social networks based on homophily and distance. Agent characteristics and networks follow NHANES, BRFSS and ADD HEALTH. Each agent has a threshold value (Q) for positive behavior change toward healthier eating based on a utility-maximization strategy that includes environmental factors and social influence. Four targeting strategies are evaluated; number of targets and intervention efficacy are held constant and based on literature. Network-based targeting selects subjects based on higher centrality or influence using influence maximization techniques. **Results:** We found that network-based targeting of interventions shows higher efficiency across a range of parameter values due to social multiplier effects. Traditional targeting approaches (vulnerable communities or high-risk individuals) do not maximize reach in the population and are less effective at diffusing the effects of the intervention. Environments modify the outcome of different targeting strategies and should be taken into account. **Conclusions:** Targeting influential individuals based on social network properties leads to greater intervention reach and effectiveness in a simulated population compared to traditional approaches. ABMs can provide useful guidance about how to deploy scarce intervention resources.

T-P-LB-3818**Did the Berkeley Sugar-Sweetened Beverage (SSB) Tax get passed down onto sugar sweetened beverage prices?**

Shu Wen Ng *Chapel Hill North Carolina*, Lynn Silver *Oakland CA*, Suzanne Ryan-Ibarra *Sacramento California*, Barry Popkin *Chapel Hill NC*, Jennifer Poti *Chapel Hill North Carolina*, Cory Hamma *SACRAMENTO CA*

Background: The first sugar sweetened beverage (SSB) tax in the US became effective on March 1, 2015. We assessed whether the tax was passed through to SSB prices. **Methods:** Prices were

collected across 26 supermarkets, corner stores, pharmacies and gas stations in Berkeley, CA in Dec 2014 and June 2015 for 68 beverages (751 prices in Dec 2014; 801 in June 2015), and store staff were surveyed. Price changes were not sales-weighted. A second study documented sales-weighted prices using retailer scanner data from Jan 2013-June 2015 of all transactions from a large chain's stores in Berkeley, and 3 nearby cities. Data covered 71.9 million transactions, 9 million from beverages, with 6.9 million included here. **Results:** SSB price per ounce rose at large (+1.32¢) and small (+1.65¢) chain supermarkets, and chain gas stations (+2.71¢). In chain pharmacies, the SSB tax was partially passed-through to SSBs (+0.61¢), as well as untaxed beverages (+0.43¢). This did not occur in independent supermarkets or gas stations. Chain supermarkets' staff were more likely to report receiving information about the tax from the city. Scanner data on 3,500 beverage products sold in 6.9 million transactions found pass-through started in Jan 2015 (+0.87¢), stopped, and then re-started in April 2015 (+0.52¢ April, +0.87¢ May, and +1.34¢ June 2015). The pass-through also occurred in neighboring cities. Real prices in ¢/oz of smaller package items were higher than larger ones, and the pass through was not uniform by size.

Conclusions: Four months after the delayed implementation, the Berkeley SSB tax is being reflected in prices, but not uniformly across store types, beverage categories, or package sizes. Findings were consistent across the two studies. The tax passed through starting April 2015 and grew, with overshifting occurring by June 2015. This occurred beyond the Berkeley location suggesting regional pricing of chains. More outreach to independent stores is needed.

T-P-LB-3819

Lack of availability and marketing of healthy foods as obesity risk factors in stores

Kacie Blackman *Los Angeles CA*, Jimi Huh *Los Angeles California*, Yaneth Rodriguez *Los Angeles California*, Lourdes Baezconde-Garbanati *Los Angeles CA*, Mary Ann Pentz *Los Angeles CA*

Background: The majority of all deaths in California are related to obesity, diabetes, heart disease, cancer, and tobacco. One way that these deaths could be prevented is through healthy eating. However, food outlets needed to be examined to determine how healthy the food environment was, especially for low income families. The objective of this project was to determine if there was an association between store type (small market, chain convenience, supermarkets, discount) and availability and marketing of healthy and unhealthy food and beverages. **Methods:**

Local lead agency staff surveyed 470 stores (e.g., chain convenience, small market, supermarket, discount) located in Los Angeles and Orange Counties that were part of a larger statewide campaign, the Healthy Stores for a Healthy Community. The analysis compared the food/beverage environment between small markets and other store types. **Results:** Small markets were significantly (p **Conclusions:** This descriptive analysis builds upon our rationale for now exploring latent class analysis regarding the availability and marketing of healthy/unhealthy foods and beverages.

T-P-LB-3820

Mapping the unique food environment of Singapore

Charoula Nikolaou *Singapore*, Michael Lean *GLASGOW SCOTLAND*

Background: Food environments can influence people's food choices and nutritional status. Current food environments have been associated with driving unhealthy diets and energy overconsumption and obesity prevalence has been linked with the density of food and grocery shops. Singapore is a unique city-state where 60% of residents eat out-of-home at least 4 times/week. The aim of this study was to map the food environment of Singapore.

Methods: Information on the number and type of food catering outlets along with information on other aspects of healthful lifestyles were collected through the Singapore Government website (www.data.gov.sg). We validated the information with two ways; 1) by in-person visits to a number of the addresses where food shops/gyms/parks were located according to the government's list and 2) by using Google maps. **Results:** Since 2000, there has been an increase of 39% (+6,090) in food shops and 2% (+293) in food stalls. In the same period there has been a reduction in the farms growing fruit and vegetables by 12% (-12). Density of different amenities are; food shops=4.0/1,000 citizens, food stalls=3.6/1,000 citizens, parks=0.01/1,000 citizens, gyms 0.04/1,000 citizens, supermarkets=0.06/1,000 citizens, convenience stores=0.2/1,000citizens and fruit&veg markets=0.001/1,000 citizens. The prevalence of common chronic diseases linked with the food environments status were; obesity=10.8%, abdominal obesity=16.9%, diabetes=11.3%. There has also been an increase in calorie intake by 8.1% for men and 9.0% for women since 2004 and only 210 food places joined the 'Healthier Choice' scheme of Health Promotion Board most of them being chain-restaurants like McDonalds, Pizza Hut.

Conclusions: Singapore has a unique food environment offering many opportunities for interventions aiming at preventing weight-gain and diabetes. It may have comparatively lower prevalence of

obesity to other countries but its population is at a greater risk of metabolic complication such as diabetes, due to its ethnicity.

T-P-LB-3821

Blood mercury concentration in relation to overweight or obese status among Korean children and adolescents: KNHANES 2010-2012

Kyung Hee Park *Anyang-Si, Gyeonggi-do NA*, So Young Park *Seoul NA*, Hye Mi Noh *Anyang-si Gyeonggi-do*

Background: Harmful effects of mercury on cardiovascular disease have been suggested in many epidemiologic studies. However, reports on harmful effect of mercury in relation to overweight or obesity among children and adolescents have shown inconsistent findings. **Methods:** The study subjects were 1,002 children and adolescents (10-18 years of age) from the Korean National Health and Nutrition Examination Survey (KNHANES) 2010-2012. Overweight or obese group was defined as over the 85th percentile of the age- and sex-specific BMI norms or BMI over 25. Subjects were categorized into four groups by age and gender specific blood mercury concentration. Multivariate logistic regression was performed to estimate the odd ratio (OR) and 95% confidence interval (CI) for investigate the association.

Results: The adjusted ORs comparing prevalence of overweight or obese group or obese group among children and adolescents in the highest quartile versus those in the lowest quartiles were 2.41 (95% CI: 1.43-4.07), 3.08 (95% CI: 1.56-6.10), respectively. After stratified by gender, the adjusted ORs of Q2, Q3, Q4 of blood mercury concentration compared to the lowest quartiles (Q1) were 1.26 (95% CI: 0.53-3.01), 1.62 (95% CI: 0.72-3.65), and 2.95 (95% CI: 1.36-6.36) in female, respectively. **Conclusions:** Increasing blood mercury concentration was associated with overweight or obesity among Korean children and adolescents. Further longitudinal studies in different age, gender, race will be needed to confirm these associations.

T-P-LB-3822

Associations between dietary carbohydrates and carbohydrate sub-types and weight in the Diabetes Prevention Program (DPP)

Allison Sylvetsky *Washington DC*, Sharon Edelstein *Rockville Maryland*, Linda Delahanty *Boston MA*, Edward Boyko *Seattle WA*, Edward Horton *Boston MA*, Uzoma Ibebuogu *Memphis Tennessee*, William Knowler, Maria Montez *SAN ANTONIO TEXAS*, Marinella Temprosa *ROCKVILLE Maryland*, Geoffrey Walford *Boston Massachusetts*, Kristina Rother *Bethesda Maryland*, DPP Research Group *Rockville MD*

Background: Ideal diet composition for weight loss has not been determined. We evaluated whether carbohydrates (CHO), grains, fruits, vegetables and soda were associated with weight and predicted weight change in DPP participants randomized to placebo (PLBO), intensive lifestyle (ILS), or metformin (MET). **Methods:** Baseline and year 1 diets were assessed by a modified Block food frequency questionnaire. Associations of diet with baseline weight, and change in diet with change in weight at year 1, were assessed by linear regression. Baseline models were adjusted for race/ethnicity, age, sex, calories (kcal) and physical activity (PA). Weight change models were further adjusted for baseline weight, change in kcal and change in PA, and stratified by treatment. **Results:** Higher % calories from CHO was inversely associated with weight ($\beta = -0.32 \pm 0.04$ kg/%CHO p **Conclusions:** Our findings suggest that increasing the % of calories from CHO, and specifically increasing fruit and fiber, may promote weight loss, independent of changes in calorie intake.

T-P-LB-3823

Acceptance-based behavioral weight loss treatment improves outcomes for African-American participants

Meghan Butryn *Philadelphia Pennsylvania*, Evan Forman *Philadelphia PA*, Michael Lowe *Philadelphia Pennsylvania*, Amy Gorin *Storrs CT*, Fengqing Zhang *Philadelphia PA*

Background: Acceptance-based behavioral treatment is designed to improve outcomes for individuals who find weight loss in standard behavioral treatment challenging. African-American individuals are one such sub-group who typically lose less weight than average in behavioral treatment. Addressing this disparity is a key priority. Acceptance-based behavioral treatment aims to increase willingness to experience the discomfort that can accompany behavior change and enhance commitment to long-term goals through values clarity and mindful decision-making. **Methods:** In the ENACT clinical trial, 284 overweight and obese adult participants (29% African American, 66% Caucasian) were recruited from the community and randomly assigned as follows: standard behavioral treatment (BT), BT with a focus on managing the food environment (BT+E), or an acceptance-based version of BT that also integrated some environmental strategies (BT+EA). Treatment was group-based and provided in 26 sessions over 12 months. Percent weight loss at 12 months was measured in the research clinic. **Results:** In a two-way ANCOVA, race significantly moderated the effect of condition on weight loss ($p = .04$), such that African American participants lost less weight than Caucasian participants in the BT (6.2% vs. 11.8%) and BT+E conditions (6.6% vs. 12.2%), but weight loss in these two groups

was similar in the BT+EA condition (9.4% vs. 11.8%). Among African-Americans, a clinically significant weight loss (i.e., >5%) at treatment completion also was more likely in the BT+EA condition (80%) than in the BT (57%) or BT+E (48%) conditions ($p = .04$). **Conclusions:** This study further demonstrates the potential of acceptance-based behavioral treatment to increase weight loss among participants who typically would lose less weight than average in a standard behavioral treatment. Further research should identify the specific pathways through which African-American participants' treatment outcomes are being improved.

T-P-LB-3824

Effect of inulin and whey protein consumed alone or in combination on appetite and gut microbiota in overweight and obese adults

Raylene Reimer *Calgary AB, Holly Willis St. Paul MN, Jasmine Tunnicliffe Calgary Alberta, Adriana Soto-Vaca Golden Valley MN*

Background: Combining protein and fiber may reduce appetite more so than individual consumption. Our objective was to determine the effect of inulin fiber and whey protein consumed alone or in combination on appetite, body composition and gut microbiota in overweight and obese adults. **Methods:** This was a 12 week, placebo-controlled, parallel-arm, double-blind study. Overweight and obese adults ($n=125$; $BMI>25$) were randomly assigned to receive isocaloric snack bars of: 1) control; 2) inulin (16 g/d); 3) protein (10 g/d); 4) inulin (16 g/d) + protein (10 g/d). Appetite (subjective ratings and ad libitum buffet), body composition (DXA), quality of life (SF-36) and gut microbiota (Illumina sequencing of fecal samples) were measured. **Results:** Hunger, desire to eat and prospective food consumption were all significantly lower in participants consuming the protein, inulin and combination bars compared to control bars at 12 week ($P<0.05$). **Conclusions:** Snack bars made with whey protein, inulin or the combination of both improve appetite regulation in overweight and obese adults as compared to bars without. No additive benefits of the combination were observed in this study. Bars containing inulin altered the gut microbial structure in participants over the 12 week study with an expected increase in Bifidobacterium abundance.

T-P-LB-3825

A continuous surveillance and follow-up can perpetuate weight loss after discontinuing drugs for obesity.

Flavio Cadegiani *Brasilia DF*

Background: Obesity requires a long-term follow-up, like any chronic disease, with a slowly decrease in drugs doses when these are prescribed, otherwise weight regain is certain. The lack of ability to deal with drug discontinuation is one of the main reasons why pharmacotherapy for obesity has not been successful in most cases. Taking into account that surveillance has shown to be an important part of a triumphal obesity intervention, in this protocol, a health professional surveillance becomes the main step after interrupting drugs for obesity. In this review, results over a one-year or more of follow up after pharmacotherapy ending are demonstrated. **Methods:** Included subjects were those who were treated with at least three anti-obesity drugs, on or off-label, and were discontinued for more than one year after a slow decrease in each drug doses, and whose total drug therapy period was more than 18 months. For inclusion, patients had to be seen at least four times by a dietician or a medical doctor in the last 12 months, with non-pharmacological actions if needed. Body weight loss (BWL), waist circumference loss (WCL) were evaluated for analyzing body weight regain (BWR) and waist circumference regain (WCR). Patients who restarted pharmacotherapy were excluded. **Results:** A total of 51 patients were included. The mean BWL was 27.3kg and WCL was 25.7cm during the weight loss pharmacotherapy period. After one or more year after discontinuation of medications, mean BWR was 2.1kg, and a BWR more than 20% were seen in 2 patients(3.9%), whereas WCR was in average 3.2cm, and the same two subjects and one other (total of three) regained more than 20% of WC. **Conclusions:** For a long-term successful therapy against obesity, all aspects need to be considered. Here, a professional surveillance was shown to be an important foundation in the maintenance of weight loss, in patients who used medications for obesity therapy, with better results after interruption than usually described in medical literature.

T-P-LB-3826

Effect of a 12-week customized nutrition intervention on eating habits and body weight by the educational compliance among mild obese ($25\leq BMI$)

Hyunjung Lim *Yongin Yongin, Bo Hyung Kim*

Background: Obesity prevalence is increasing worldwide including Asian countries. It has become a serious health problem in South Korea. We examined the effect of a 12-week customized nutrition intervention on eating habits and body weight by their educational compliance in Korean mild obese adults.

Methods: The subjects ($n=87$, $25\leq BMI$) **Results:** Weight, BMI and body fat (kg) using BIA are significantly different between high and low compliance groups. There were significantly decreased in

high compliance group (p **Conclusions:** These results suggested that high compliance of nutrition intervention was effective not only for the improvement of eating behavior and lifestyle but also for weight reduction among mild obese adults in South Korea.

T-P-LB-3827**SmartMoms™: a novel smartphone intervention is effective at reducing gestational weight gain in overweight and obese pregnant women**

Leanne Redman *Baton Rouge Louisiana*, Jeffrey Breaux *Baton Rouge Louisiana*, Diana Thomas *Montclair NJ*, Karen Elkind-Hirsch *Baton Rouge Louisiana*, Tiffany Stewart *Baton Rouge LA*, Corby Martin *Baton Rouge LA*, Daniel Hsia *Baton Rouge LA*, Jeffrey Burton *Baton Rouge LA*, Anne Gilmore *Baton Rouge LA*, John Apolzan *Baton Rouge Louisiana*, Elizabeth Frost *Baton Rouge LA*, Loren Cain *Baton Rouge LA*, Abby Duhé *Baton Rouge LA*, Porsha Vallo, Katelyn Falgout *Baton Rouge LA*, Shelly Ragusa *Baton Rouge Louisiana*, Heather Walden, Allison Davis *Baton Rouge LA*

Background: Pregnancy is considered a teachable moment yet implementation of an intensive lifestyle intervention alongside an already burdensome prenatal care plan is unrealistic for most women. Given that gestational weight gain (GWG) is associated with childhood obesity and more than two-thirds of pregnant women exceed current guidelines, the need to develop scalable and cost-effective approaches to deliver intensive lifestyle programs in pregnancy is urgent. **Methods:** Fifty-four overweight (n=25) and obese (n=29) pregnant women were enrolled in this study to test whether an intensive lifestyle program delivered through a smartphone (SmartMoms-Phone) would be as successful as a traditional in-person program (SmartMoms-Clinic) and would reduce the proportion of women with excess gestational weight gain in comparison to a non-intervention group (Physician Directed-Control). SmartMoms is an interactive smartphone intervention that includes use of the IOM weight chart, goal setting and self-monitoring of weight and activity with digital scales and accelerometers against personalized weight/activity graphs, receipt of SmartTips© weekly in the second trimester and biweekly in the third trimester supported by personalized feedback from counsellors. **Results:** Study outcomes were assessed at clinic visits conducted ≤ 13 weeks and between weeks 35-36 of gestation. GWG in the physician directed group was 12.8 ± 1.5 kg and 9.0 ± 0.9 kg in the SmartMoms groups (p=0.05). According to the 2009 IOM guidelines, 84.6% of women in the physician directed group had excess GWG in comparison to only 56.8% of women receiving the SmartMoms intervention (p=0.01). **Conclusions:**

Intensive lifestyle interventions promoting a healthy GWG according to the 2009 IOM guidelines can be delivered through smartphones to control GWG with a high degree of efficacy and future studies are warranted.

T-P-LB-3828**Low-cost, scalable classroom-based approach to promoting physical activity in preschool children.**

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Background: This study examined the impact of short activity breaks in preschool children. The hypotheses were that preschool children receiving to 3 five-minute activity breaks/day would increase (a) school time physical activity and (b) education scores compared to a control group. **Methods:** For 8 weeks, the Intervention Group (n=13) incorporated three 5-minute activity breaks into their classroom time while the Control Group (n=12) did not incorporate the activity breaks. Physical activity was measured using a triaxial accelerometer. Education was assessed using standardized techniques. **Results:** After 8 weeks, the preschool children in the Intervention Group increased their school time physical activity from $11,641 \pm (SD) 1368$ Acceleration Units (AU)/hour to $16,058 \pm 2253$ AU/hour (P **Conclusions:** Incorporation of three 5-minute activity breaks was associated with increased school time physical activity and improved learning.

-P-LB-3829**The Implementation and Acceptability of Social Media in the Medical Weight Management of Youth with Severe Obesity**

Elizabeth Prout *Philadelphia Pennsylvania*, Channele Bishop-Gilyard *Philadelphia PA*, Renee' Moore *Atlanta GA*, David Sarwer *Blue Bell PA*

Background: Increased contact hours for weight management (WM) are associated with greater weight loss in youth with obesity. Social media (SM) use has increased in youth and could increase contact hours without the burden of in-person visits. **Methods:** A novel 12-week peer-based longitudinal pilot study in 13 youth with severe obesity (body mass index (BMI) ≥ 35 kg/m²) ages 14-21 enrolled from a medical WM program was conducted. The primary objective was to examine the feasibility and acceptability of using a private social media (SM) platform (Facebook™) to promote behavior change and self-efficacy through modeling and social support beyond that of a standard WM program. The intervention consisted of videos by specialists

and youth about nutrition, exercise, and behavior modification posted 3 times a week. Youth were asked to like and/or comment on videos and posts. Posts were monitored by a facilitator. Youth were asked to track food intake and activity using MyFitnessPal® or paper and to post/inbox their goal progress to the facilitator and/or group. **Results:** Youth were 16 years old (mean age), 31% male, and 58% African-American. Based on a 10-item survey for acceptability, all participants indicated the intervention was enjoyable, helpful, and reinforced their WM program. Ninety-two % would recommend using SM to support other youth, and felt it motivated them to make progress. In-person contact was desired in addition to SM by 62%. Only 54% of youth felt a SM group alone would be helpful. Over the 12 weeks, youth had on average of 48 SM contacts and 4 in-person visits (2 individual clinic, and 2 group). Secondly, youth lost weight (-1.01kg, BMI-1.25, BMI-z-0.03), and showed improved depression, quality of life, and perceived social support scores, although we were underpowered to detect significance. **Conclusions:** Social media use for WM is feasible and acceptable and increases points of contact in youth with severe obesity. WM programs should consider the inclusion of SM in their practice.

T-P-LB-3830

The association between cooking self-efficacy and cooking attitudes on dietary intake and health in a Hispanic youth population

Annie Markowitz *Austin TX*, Jaimie Davis *Austin TX*, Lauren Martinez *Los Angeles CA*, Nicole Gatto *Loma Linda CA*, Donna Spruijt-Metz *Los Angeles California*, Mackenzie Spaniol *Farmers Branch TX*

Background: Numerous interventions include cooking components, however few studies have examined associations between cooking attitudes (CA) and cooking self-efficacy (CSE) on dietary intake and health outcomes. This study assessed whether changes in CA and CSE were associated with changes in dietary intake and health outcomes after a 12-week gardening, cooking, and nutrition intervention (“LA Sprouts”). **Methods:** The LA Sprouts intervention was delivered to 3rd-5th graders during 2012-2014. Height, weight, body fat, waist circumference, systolic and diastolic blood pressure (SBP, DBP), and dietary intakes via the Block Screener were collected at baseline and post-intervention. ANCOVAS assessed the relationship between changes in CA and CSE (based on questionnaire; scores on scales categorized into tertiles) and changes in health outcomes and dietary intake in the intervention group only. A priori covariates included: baseline CA and CSE, ethnicity, sex, age, season, language spoken at home,

baseline energy intake, and change in energy intake. **Results:** 168 participants, 52% female, 88% Hispanic, and 48% overweight/obese received the LA Sprouts intervention and had complete data. Students with the largest improvement in CA compared to those with the smallest improvement had the greatest increases in fruit (+0.27 vs. -0.56 cups/d; p **Conclusions:** Future interventions may focus on improving CA and CSE as a way to improve dietary intake and blood pressure in high-risk children.

T-P-LB-3831

A novel selective glucocorticoid/mineralocorticoid receptor modulator reduces diet-induced obesity and improves hepatic lipid metabolism

Lisa Koorneef *Leiden Zuid-Holland*, José van den Heuvel *Leiden Leiden*, Onno Meijer *Hazel Hunt Menlo Park CA*, Patrick Rensen *Leiden Zuid-Holland*

Background: Metabolic syndrome is characterized by obesity, high blood pressure, glucose intolerance and non-alcoholic fatty liver disease (NAFLD). Corticoids have major metabolic effects and both glucocorticoid (GR) and mineralocorticoid receptor (MR) antagonism improves aspects of metabolic syndrome. In this study we tested the efficacy of CORT 118335 (C118335), a selective modulator type drug (exerting both agonism and antagonism) at GR, with antagonistic effects via MR. **Methods:** 10-week old C57BL/6J mice were fed a high-fat diet (HFD) for 3 weeks without or with C118335. Liver and white adipose tissue (WAT) were weighted and stained to determine macrophage (F4/80) and lipid content. Glucose tolerance was tested via ivGTT and expression of selected genes was evaluated with RT-qPCR.

Results: C118335 reduced body weight gain, WAT weight, and F4/80 staining (-41%, P **Conclusions:** C118335 reduces diet-induced obesity development and improves glucose metabolism. C118335 reduces hepatic steatosis and inflammation in liver and WAT, which may be due to GR agonism and/or MR antagonism. Selective modulation of the GR combined with MR may be a promising target for combating obesity and related disorders.

T-P-LB-3832

The Bariatric Behavior Efficacy Measure (BB-EM) to inform post-bariatric surgery interventions

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Background: Measures of bariatric surgery patient perceptions, beliefs and health behaviors are needed to develop robust post-

bariatric surgery-specific interventions to optimize weight loss and its maintenance after bariatric surgery. The objectives of this study were to develop a measure to assess patient 1) perceptions regarding following recommended post-surgical eating behaviors and physical activity, 2) expectations of surgical outcomes, and 3) satisfaction with those outcomes. Using exploratory analysis, we then tested the relationships between measure domains and weight loss at 1-2 years post-surgery. **Methods:** Patient interviews (n = 70) and health behavior theory were used to develop a conceptual framework and questionnaire items of the bariatric behavior efficacy measure (BB-EM). The questionnaire underwent cognitive testing with 40 patients. Following revision, the questionnaire was tested for reliability and validity. Forty patients completed the questionnaire, twice, prior to surgery (test-retest reliability). Fourteen multi-disciplinary bariatric surgery clinicians assessed the questionnaire for content validity. Thirty patients completed the questionnaire pre- and one or more years post-surgery. **Results:** Internal reliability for the BB-EM domains yielded Cronbach alphas ranging from 0.70 to 0.91, and a Cohen kappa of 0.90 ($p < 0.001$). All domains, as well as the total score showed good to excellent agreement, with intraclass coefficients ranging from 0.66 to 0.90. The scale showed adequate content validity, with ratios greater than 0.51 for 33/44 items ($p < 0.05$). The scale showed adequate predictive validity: satisfaction with improvement in health outcomes, experience as a result of surgery, the ability to move around better, and improvements in appearance were associated with the amount of weight lost ($r = 0.44$ to 0.68 , $p < 0.001$ to 0.05). **Conclusions:** The BB-EM is a valid measure, which can be used to inform post-bariatric surgery interventions and predict post-surgery outcomes.

T-P-LB-3833

Associations of trimester-specific gestational weight gain with levels of hormones in cord blood at delivery

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Background: Excessive gestational weight gain (GWG) during pregnancy is associated with adverse outcomes for mothers and offspring. Early, mid, and late pregnancy GWG have different associations with fetal growth, but associations with cord blood hormones, which might predict later health, are not well studied.

Methods: In 988 pregnant women from the pre-birth Project Viva cohort, we calculated trimester specific GWG using clinically recorded weights. Outcomes were levels of umbilical cord blood

hormones. We used linear regression models adjusted for maternal race/ethnicity, pre-pregnancy BMI, parity, education, pregnancy smoking status and child sex; 2nd and 3rd trimester models were additionally adjusted for previous GWG. **Results:** Mean \pm SD pre-pregnancy BMI was 24.9 ± 5.5 kg/m² and 1st, 2nd and 3rd trimester GWG rates were 0.22 ± 0.22 , 0.49 ± 0.19 and 0.46 ± 0.22 kg/wk. Mean \pm SD cord blood hormone levels were: insulin-like growth factor [IGF]-1 (56.5 ± 24.3 ng/mL), IGF-2 (408.8 ± 92.9 ng/mL), IGFBP-3 (1084 ± 318 ng/mL), insulin (6.5 ± 7.2 uU/mL), C-peptide (1.0 ± 0.6 ng/mL), leptin (9.0 ± 6.6 ng/mL) and adiponectin (28.8 ± 6.8 μ g/mL). Greater 1st trimester GWG (kg/wk) was associated with higher insulin (2.4 uU/mL; 95% CI 0.4, 4.4) and c-peptide (0.3 ng/mL; 95% CI 0.1, 0.5) and lower adiponectin (-2.2 μ g/mL; 95% CI -4.3 , -0.1). Greater 2nd trimester GWG (kg/wk) was associated with higher IGF-1 (11.5 ng/mL; 95% CI 3.2, 19.8), IGF-2 (39.4 ng/mL; 95% CI 5.8, 72.8), IGFBP-3 (207.9 ng/mL; 95% CI 97.1, 318.8) and leptin (4.4 ng/mL; 1.9, 6.9). 3rd trimester GWG was not associated with cord blood hormones. **Conclusions:** 1st trimester weight gain matters more for cord blood hormones related to glucose regulation, whereas 2nd trimester gain matters more for those related to growth and adiposity. These findings suggest that to prevent adverse offspring outcomes related to excessive GWG, interventions to modulate GWG should start before pregnancy.

T-P-LB-3834

Evidence of bias against adoption of anti-obesity pharmacotherapies

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Background: Just under half (46%) of adults in the US fit the criteria for use of anti-obesity pharmacotherapy (AOP), but only 2% of those receive such treatment. This is in sharp contrast to the 13% of adults in the US with diabetes, with 81% of those receiving anti-diabetes pharmacotherapy (ADP). Qsymia and Belviq were FDA-approved in 2012, Contrave in 2014, and phentermine in 1959. Invokana, Farxiga, and Jardiance are the first subtype 2 sodium-glucose transport protein inhibitors (SGLT2s) to be FDA-approved for type 2 diabetes, in 2013/2014. **Methods:** A retrospective analysis, from 2012-2015, of the IMS Health National Prescription Audit assessed the adoption rate of AOPs. This descriptively evaluated the change in mean prescriptions per month over the analysis period. The most commonly prescribed AOPs (Qsymia, Belviq, Contrave, phentermine) and the SGLT2s were included in the analysis. SGLT2s served as comparators due

to their similarly timed commercial availability as the new AOPs and their mid-range placement in the AACE/ACE Glycemic Control Algorithm. **Results:** As of the latest observation, the entire ADP market, excluding insulin, was 13x the entire AOP market. SGLT2s comprised 4% of the ADP market, which was equivalent to over half of the entire AOP market. The relative AOP market share was: 75% phentermine, 6.9% Belviq, 5.9% Contrave, 5.3% Qsymia. The mean increase in prescriptions per month were: 34,151 for SGLT2s, 10,548 for new AOPs, and 2,100 for phentermine. Medical specialties prescribing the majority of each of the AOPs and the SGLT2s were Family and Internal Medicine. **Conclusions:** The adoption rate of SGLT2s has been nearly exponential, while the adoption rate of new AOPs have been linear. Considering the relative prevalence of obesity to diabetes and that obesity is a major cause of diabetes, these results are paradoxical and suggest bias against the prescribing of new AOPs. The under-prescribing of AOPs is widely acknowledged, but this is the first data to demonstrate its extent in the US.

T-P-LB-3835

Adenovirus-36 Antibody Status and Development of Childhood Obesity in The National Growth and Health Study
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Background: There are consistent cross-sectional associations between Adenovirus-36 (ADV36) infection and obesity in children; and cell and animal models of obesity demonstrate an ADV36 infection-obesity pathway via amplified adipogenesis, yet there is little prospective examination of ADV36 infection and obesity in children. **Methods:** In a random, convenience sample of 839 black and white girls in the National Growth and Health Study (NGHS), plasma concentration of ADV36 antibodies were measured by an enzyme-linked immunosorbent assay at year 3 and 7 (~age 12 and 16 years) to determine infection status at 2 time points in individuals. Participants were followed through year 10 (19 years age). Cross-sectional (logistic regression) and longitudinal (Cox regression) analyses were carried out to examine the association between ADV36 infection status (yes v. no) with overweight ($\geq 85\%$ of BMI for age and sex) and obese ($\geq 95\%$) statuses accounting for demographic, socioeconomic, psychosocial, developmental, dietary and physical activity factors, and exposure status at alternate year. **Results:** Approximately 35% of girls were seropositive for ADV36 at year 3 and 7 respectively, and 215 were seropositive at both time points. There was no cross-sectional association between ADV36 infection status and

overweight or obesity at either time point. For example, the odds ratio (OR) and 95% confidence interval (CI) at year 7 of being obese according to a positive infection status was 0.94, 95% CI (0.62-1.43). Similarly, there was no prospective association between ADV36 infection status and incidence of overweight or obesity from either time point. For example, the hazard ratio and 95% CI for the incidence of obesity over 7 years of follow up according to being ADV36 seropositive at year 3 was HR=1.04, 95% CI (0.61-1.79). **Conclusions:** There was no association between ADV36 measured at two time points and cross-sectional or incident overweight and obesity in a sample of girls from the NGHS.

T-P-LB-3836

Gender Differences in Self-Rated Body Image: Implications for Weight Management Attempts and Healthy Lifestyle Practices
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Background: In 2013, 34.4% of college students were overweight/obese (American College Health Association, 2014). Research suggests that obese adults underestimate their own weight status and as a result are less likely to engage in physical activity or healthy lifestyle behaviors (Duncan, et al., 2011). The purpose of this study was to examine how college students' perceptions of their weight status relate to their actual weight status, lifestyle behaviors and the perceived quality of those practices. Gender differences were explored. **Methods:** Participants included 681 students attending New Mexico State University. MEASUREMENT. The online survey administered included the Body Image Assessment (Thompson & Gray, 1995), the International Physical Activity Questionnaire (Craig et al., 2003), the Eating Behaviors Questionnaire (Greenwood, et al., 2008) and the Eating Disorders Examination (Fairburn & Beglin, 2008). Additionally, this survey also assessed demographics, Body Mass Index, perceived weight status and attempts at weight management. ANALYSES. Analyses included bivariate correlations, chi-square analyses, and MANOVAs. **Results:** Women were more accurate in their perceptions of their body image with heavier individuals rating heavier contour drawings. Their body image ratings correlated positively with weight/shape concerns, dieting practices, and sedentary lifestyle and correlated negatively with healthy eating practices (e.g., eating breakfast, number of snacks), engagement in vigorous physical activity, and physical health self-rankings. Men demonstrated much weaker relationships all around and reported less effort to lose weight

when overweight or obese. Overweight/obese and normal weight individuals reported similar levels of physical activity and fruit/vegetable consumption but rated the quality of these practices differently. **Conclusions:** Findings suggest tailored overweight/obesity interventions are needed to increase awareness and healthier lifestyle among men.

T-P-LB-3837**Association between A1C Improvement and Sentiment in Diabetes Forum Posts**

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Background: Diabetes online forums are hubs of the diabetes community, where people can find support and share experiences. These forums contain a vast amount of information, which provides a novel perspective to better understand the relationship between diabetes and individual's social behaviors. **Methods:** The objective is to examine the association between improvement in glycated hemoglobin A1C and polarity (i.e., positive, negative, neutral) of the sentiment expressed in written posts. We collected 294310 posts from Tudiabetes forum between 6/1/2007 and 3/31/2014. We used pattern-based techniques to extract A1C values. Improvement in A1C was defined as $(A1C_a - A1C_b) > 0$, where A1C_a and A1C_b are the A1C values extracted from user's earliest and latest posts, respectively. Polarity of written text was determined using Stanford Sentiment Analysis. For each user, Sentiment Index was defined as $nPos - nNeg$, where nPos and nNeg refer to the number of positive and negative posts respectively. Larger Index values reflect more positive sentiment. Users were classified as Optimistic or Pessimistic based on their Sentiment Index. Pearson chi-square analysis was used to compare improvements in A1C values between groups. **Results:** Users with a Sentiment Index value > 0 were classified as Optimistic ($n=118$); users with Sentiment Index values ≤ 0 were classified as Pessimistic ($n=783$). Improvement in A1C values was achieved by 72% of forum users in the Optimistic group compared to 57% in the Pessimistic group, $p=0.024$. **Conclusions:** The results show a positive correlation between A1C improvement and sentiment. The implications of these findings are twofold. For individuals, they are suggested to be proactive to seek support and share experiences, which is likely to bring them positive effects in return. For forum organizers, they are suggested to highlight the successful experiences shared by users. The diffusion of helpful experiences and optimistic attitudes will benefit the community.

T-P-LB-3838**Smaller portions of an energy dense entree incentivize children ages 7-9 years to consume more vegetables**

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Background: Offering children large portions of energy-dense entrees at meals promotes intake of those foods and may cause children to eat less of other foods at the meal including vegetables. Whether offering smaller portions and less energy from energy-dense entrees provides greater incentive for children to consume vegetables at meals is not known. **Methods:** A between subjects design was used to evaluate the effects of entree portion size on vegetable intake at meals among 102 children ages 7-9 years. Children were randomly assigned to 1 of 3 experimental conditions that varied in entree portion size (147 g, 220 g, 293 g, respectively) to manipulate total energy available at a dinner meal (50%, 75%, and 100% of optimal meal energy). Each child was seen in a control condition that provided 125% of optimal energy from dinner. Fixed amounts of peas (85 g) and corn (85 g) were provided in each condition. Meal energy intake was assessed using weighed food intake methods in conjunction with manufacturers' nutritional information. **Results:** Children assigned to the 50% and 75% energy condition consumed less total energy at the meal compared to the children in the 100% condition (343.1 ± 71.0 v 391.5 ± 166.8 v 521.2 ± 170.0 , $p < 0.01$). **Conclusions:** The results of this study provide evidence that offering children smaller portions of energy dense entrées may increase the proportion of energy consumed at meals from vegetables.

T-P-LB-3839**Assess utility of advanced machine learning techniques to build sentiment classifiers and demonstrate its effectiveness in predicting sentiment identification of diabetes-related social media posts.**

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Background: Recently, numerous diabetes-specific social networking sites and forums have been developed which offer the public a valuable resource for seeking and sharing information, advice and support. Developing tools that could collate this data

will be of immense help to patients/doctors. Machine learning techniques such as sentiment analysis could be used to identify positive/negative sentiment expressed in a natural language text. This data could be used to develop tools that facilitate the analysis of diabetes patients' online social behaviors and their impact on the patients' biomarkers. The sentiment markers in the text could be used to design and build tools to recommend products that make patients' lives easier. **Methods:** We developed a sentiment classifier using Amazon health product reviews to detect positive and negative sentiments from the Diabetessisters.org website forum posts. Specifically, we used 2000 reviews about health products posted on the Amazon website to classify 2500 diabetes forum posts. **Results:** The classification accuracy of our model is 78%. The analysis of sentiment bearing words revealed that terms such as "extremely high glucose", "sugar increase" and "fluctuating glucose" turned out to be negative whereas terms like "exercise", "healthier routine", "journaling" and "diabetic pumps" were positive. The hemoglobin A1c (HbA1c) values were posted 67% of the time. Posts of "a1c under 6" and "a1c under 7" were classified positive while posts including "a1c high", "a1c above 9", and "a1c shot" (indicating an increase in HbA1c) were associated with negative sentiment. The term "pods meetup" is associated with high positive sentiment indicating that forum users are interested in meeting with peers in their locality. **Conclusions:** We achieved good accuracy for sentiment prediction of diabetes forum social media posts. From sentiment analysis of text it is possible to develop tools to help patients and doctors better understand perceptions of diabetes.

T-P-LB-3840

Advertising as a cue to eat: a systematic review and meta-analysis of the effects of acute exposure to unhealthy food advertising on intake.

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Background: Several studies have assessed the effects of food and non-alcoholic beverage (hereafter collectively referred to as 'food') advertising on food consumption, but the results of these studies have been mixed. This lack of clarity may be impeding policy action. The aim of this study was to examine the evidence for a relationship between acute experimental unhealthy food advertising exposure and food consumption. **Methods:** This was a systematic review and meta-analysis of published studies in which advertising exposure (television or Internet) was experimentally

manipulated and food intake was measured. Five electronic databases were searched for relevant publications (SCOPUS, PsycINFO, Medline, Emerald Insight and JSTOR). Inverse variance meta-analysis was used, whereby the standardised mean difference (SMD) in food intake was calculated between unhealthy food advertising and control conditions. **Results:** Twenty two papers were eligible for inclusion in this review. Data were available for eighteen papers to be included in the meta-analysis (providing twenty comparisons). With all available data included, analysis indicated a small to moderate effect size for advertising on food consumption, with participants eating more after exposure to food advertising compared to controls (SMD: 0.37, 95% confidence interval [CI]: 0.09, 0.65, I² = 98%). Sub-group analyses demonstrated that the experiments with adult participants showed no evidence of an effect of advertising on intake (SMD: 0.00, p = 1.00, 95% CI: -0.08, 0.08, I² = 8%) but a significant effect of moderate size was found for children, whereby food advertising exposure was associated with greater food intake (SMD: 0.56, p = 0.003, 95% CI: 0.18, 0.94, I² = 98%).

Conclusions: Evidence to date shows that acute food advertising exposure does increase food intake in children, but not adults. These data support public health policy action which seeks to reduce children's exposure to unhealthy food advertising.

T-P-LB-3841

Obesity prevention in child care: Developing a tool to determine if centers' written policies reflect current best practices for infant care

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Background: Little is known about how well child care centers' written policies support best practices for obesity prevention among infants (< 1 year). **Methods:** We developed and tested the Baby Child Care Policy Assessment Tool (BabyCCPAT), a 26-item coding instrument to assess child care center written policies related to infant care across six evidence-based domains: Nutrition Standards, Age Appropriate Foods/Beverages, Responsive Feeding, Infant Activity, Sleep, and Parent Communication. Adapting methodology from an existing tool developed to assess preschools (WellCCAT, Falbe et al), we coded policies from a statewide sample of n=36 centers serving infants in Massachusetts. Policies were scored and summarized on a scale of 0-100 based on comprehensiveness and strength using means and standard deviations (SD). We tested inter-rater reliability of 2 coders using

intraclass correlation (ICC) and 95% confidence intervals (CI); internal consistency was assessed using Cronbach's alpha.

Results: The BabyCCPAT demonstrated high inter-rater reliability for total scale comprehensiveness (ICC: 0.94, 95% CI 0.88 - 0.97) and total strength (ICC: 0.91, 95% CI 0.80-0.96), as well as across subscales (ICC range: 0.91-0.98). Items yielded acceptable internal validity (Cronbach's alpha = 0.74). Total scores varied greatly across centers, but were generally low for both comprehensiveness (Mean: 16.6, SD: 10.9) and strength (Mean: 7.6, SD: 7.8). Overall, center policies demonstrated greater comprehensiveness in addressing Nutrition Standards (Mean 29.6, SD 20.8) compared with subscales measuring Sleep (Mean: 9.7, SD 13.1) and Infant Activity (Mean 10.6, SD:17). Despite current recommendations, fewer than 5% of policies addressed individualized infant feeding, screen time, daily tummy time or active play, or reduced noise/light in sleeping areas. **Conclusions:** The BabyCCPAT is a novel and potentially useful resource to quantitatively assess policies related to infant nutrition, sleep, and activity in child care settings.

T-P-LB-3842

Current Practices of Obesity Pharmacotherapy, Bariatric Surgery Referral, and Coding by Health Care Providers

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Background: Rates of obesity pharmacotherapy use, bariatric surgery referral, and intensive behavioral counseling have been extremely low. We surveyed HCP beliefs, practice and knowledge regarding obesity management. **Methods:** Data were collected in June 2015 using a web-based survey. The national sample included 1000 PCPs (465 family physicians, 535 internists), 250 OB/GYN physicians, and 251 nurse practitioners (NPs). **Results:** 22% of PCPs responded that they do not prescribe obesity pharmacotherapy, regardless of obesity status/class and comorbid conditions, and 5% of PCPs responded that they would not recommend bariatric surgery to any patient, regardless of obesity status or comorbid conditions. 47% of OB-GYN physicians and 50% of NPs do not prescribe obesity pharmacotherapy, and 14% of OB-GYN physicians and 30% of NPs would not recommend bariatric surgery. 47% of PCPs, 35% of OB-GYNs, and 31% of NPs use coding for general office visit (99213) when counseling for obesity. 9% of PCPs, 6% of OB-GYNs, and 8% of NPs use intensive behavioral counseling coding for obesity (G0447). 16% of PCPs, 32% of OB-GYNs, and 39% of NPs do not dedicate office visits for obesity counseling. **Conclusions:** Reported use of

obesity pharmacotherapy appears to be increasing among PCPs, likely related to the recent approval of 4 new medications. Use among OB-GYNs and NPs are much lower. Similarly, few PCPs are averse to bariatric surgery, but aversion among OB-GYNs and NPs is significantly higher. Together, these suggest that OB-GYNs and NPs are important targets for education about obesity management. Now 4 years since Medicare's decision to cover behavioral therapy for obesity, few PCPs, OB-GYNs, or NPs use behavioral counseling for obesity. Better understanding of why this benefit is not being used will inform outreach to improve counseling rates.

T-P-LB-3843

Reduction in the risk of developing type 2 diabetes (T2D) with liraglutide 3.0 mg in people with prediabetes from the SCALE Obesity and Prediabetes randomized, double-blind, placebo-controlled trial

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Background: This 3-year trial investigated the effect of liraglutide 3.0 mg, as an adjunct to diet and exercise, in delaying the onset of T2D (primary endpoint) in adults with prediabetes and obesity (BMI ≥ 30 kg/m²) or overweight (≥ 27 kg/m²) with comorbidities. **Methods:** Participants were randomized 2:1 to once-daily subcutaneous liraglutide 3.0 mg or placebo; all were advised on a 500 kcal/day deficit diet and 150 min/week exercise. Efficacy data are observed means, with the last observation carried forward for missing values. Clinicaltrials.gov ID: NCT01272219. Sponsor: Novo Nordisk A/S. **Results:** Of 2254 randomized individuals with prediabetes (age 47.5 \pm 11.7 years, 76.0% female, weight 107.6 \pm 21.6 kg, BMI 38.8 \pm 6.4 kg/m², mean \pm SD), 1128 completed 160 weeks (52.6% on liraglutide 3.0 mg, 45.0% on placebo). At week 160, mean weight loss was 6.1% with liraglutide 3.0 mg vs. 1.9% with placebo (estimated treatment difference 4.3% [95%CI -4.9; -3.7], p10% weight loss (OR 3.1 [2.3; 4.1]), both p **Conclusions:** Liraglutide 3.0 mg, as an adjunct to diet and exercise, delayed the onset and reduced the risk of developing T2D over 3 years compared to placebo, provided greater sustained weight loss, and was generally well tolerated.

T-P-LB-3844

A new approach to the obese patient: An intensive and comprehensive therapy joining different modalities can bring significant results

Flavio Cadegiani *Brasilia DF*

Background: Clinical obesity therapies have traditionally been dissociated. A lack of comprehensive clinical management of obesity may be the main reason why clinical modalities have lost space to surgical ones. It was developed a different approach that used most of the clinical tools that were proven to be safe and effective. Multiple on and off label medications were prescribed for synergy action, together with an intensive surveillance, multiple phone calls, group therapy, often body analysis exams, visits to psychologist, dietician and/or personal trainer, and a strict long term follow up for preventing weight regain. In this study, it is described in which aspects it differed from the usual protocols and the clinical results it has shown so far. **Methods:** Included patients were those who were seen by at least two different health professionals for at least six months and were inside the protocol. Body weight (BW), fat weight (FW), muscle weight (MW), visceral fat (VF), waist circumference (WC) and BMI were evaluated. Two or more years of follow up subjects were evaluated for BW regain and normalization of AC was analyzed. For evaluation of muscle weight and visceral fat, bioimpedances inBody720 and inBody770 have been used. For the total and percentage fat loss, plethysmograph Bod Pod was chosen. **Results:** A total of 157 subjects were included in this study, with a mean follow-up of 18.3 months. Significant results were seen in BW (104.7kg to 84.9kg; -19.8kg), BMI (35.8kg/m² to 29.0kg/m²; -6.8kg/m²), FW (58.6kg to 45.2kg; -14.4kg), VF (184cm² to 75cm²; -109cm²), WC (114.4cm to 91.3cm; -23.1cm). MW did not decrease significantly and 85.3% achieved an AC. **Conclusions:** We demonstrated that when different modalities are used together, significant results can be seen, comparable to surgical outcomes, and this type of approach might be an effective option before bariatric surgery.

T-P-LB-3845

An aggressive clinical approach may prevent bariatric surgery

Flavio Cadegiani *Brasilia DF*

Background: Bariatric surgery is a safe and effective option for obesity when properly indicated, despite of surgical risks and further limitations. Last Obesity Society (TOS) guideline still recommends surgery after a period of unsuccessful clinical therapies. It was developed a protocol using an aggressive and intensive approach to obese patients with formal indication to

bariatric surgery by Body Mass Index (BMI), comorbidities and prior clinical therapies. It includes multiple drug association, intense surveillance, private health host for phone and person-to-person contact anytime, and at least two other health providers among psychotherapist, personal trainer, coach medical professional and personal dietician, or all together, as an attempt to avoid the surgical treatment. In this study, results using in this protocol are shown. **Methods:** An initial BMI >40kg/m² or >35kg/m² with comorbidities and a one or more year follow up were inclusion criteria. Body Weight(BW), excess of weight(EW), obesity classification(OC), BMI, fat weight (FW), muscle weight (MW), waist circumference(WC), visceral fat (VF) and weight regain (WR) were evaluated. A successful therapy was considered when a BW loss >20%, an EW loss >50% o) was used, and for FW was evaluated by Bod Pod (plethysmograph). **Results:** 43 patients were included, with a mean follow up of 17.3 months. Important decreases in BW (121.6kg to 90.3kg; -31.3kg), BMI (43.08kg/m² to 31.99kg/m²), BF (55.4kg to 29.7kg, -25.7kg); EW(45.2kg to 18.1kg), WC (131.2cm to 99.4cm; -23.1cm), VF (263.8cm² to 101.0cm²; -152.8cm²) and MW (-2.9kg). 20 (46.5%) subjects achieved a WC5% in 43 (100%) and >10% in 38(88.4%) subjects. Three (7.0%) patients could not prevent surgery, but 40 (93.0%) were successful by protocol criteria. Three subjects presented a WR>20% (7.5%). Surgery avoidance was 82.3% by BMI criteria. 31 (72.1%) decreased at least two classes of obesity. **Conclusions:** An aggressive approach to obesity may prevent the necessity of bariatric surgery.

T-P-LB-3846

Metabolic outcomes of an intensive lifestyle, behavioral and pharmacological intervention protocol for preventing bariatric surgery

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Background: Bariatric surgery brings several benefits, such as significant lipid and glucose metabolism normalization, which are seen in virtually all patients. These improvements lead to an overall risk reduction, which drives an enlargement of bariatric recommendations. However, new drugs that act both in metabolic profile and weight have been recently released, and these drugs, when associated, may achieve comparable changes to surgical option. Allying to an intensive surveillance, behavioral approaches, diet and exercise plan, results might be close to surgical outcomes, allowing a review in the strength of clinical therapies. **Methods:** Patients with formal indication to bariatric surgery by Body Mass Index (BMI) that were in the intervention protocol

were included. Triglycerides (TG), cholesterol LDL and HDL particles, ALP, GGT, HbA1c, basal insulin(BI), basal fasting glucose(FG), uric acid and CRP were dosed. Patients with specific medications for metabolic disorders were excluded.

Results: After inclusion and exclusion criteria, 30 subjects were selected, with a BMI 42,22kg/m². Lower levels of TG (177.4 to 81.0, -96.4)mg/dL, LDL (118.1 to 98.8, -19.3)mg/dL, ALP (52.9 to 27.8, -25.1)U/L, GGT (47.8 to 15.2, -32.6)mg/dL, BI(23.1 to 7.9, -15.2)uIU/mL, FG(91.4 to 77.5, -13.9)mg/dL, HbA1c (5.87 to 5.15, -0.72)%, uric acid (7.1 to 5.7, -1.4)mg/dL and CRP (0.73 to 0.39, -0.34)mg/L were observed after therapy. HDL did not change significantly. **Conclusions:** An intensive obesity intervention with multiple modalities can achieve impressive results with resolution of most metabolic disorders, after one or more year of follow up. This type of approach may be an effective way to prevent bariatric surgery in many patients.

T-P-LB-3847

Metabolic syndrome and obesity resolution as a result of an intensive multimodal obesity intervention protocol

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Background: Treat obesity is an effective way to promote primary prevention of several disorders, as obesity triggers several metabolic changes, such as dysglycaemia, sub-clinical inflammation and dyslipidemia. Early changes in blood biomarkers can be seen in most obese subjects. Therefore, improvement of metabolic outcomes is one of the main goals of obesity therapy. In the proposed protocol, an intensive care with diet, physical activity plan, psychotherapy and pharmacotherapy were offered for the obesity treatment. In this study, some metabolic markers results from patients under this protocol are shown **Methods:** Included patients were those followed up for at least one year and were regularly seen by at least two different professionals, and filled up criteria fro Metabolic Syndrome. Triglycerides (TG), cholesterol LDL and HDL particles, ALP, GGT, HbA1c, basal insulin(BI), basal fasting glucose(FG), uric acid and CRP were dosed. Patients with specific medications for metabolic disorders were excluded. **Results:** After inclusion and exclusion criteria, 118 subjects were selected, with a BMI 42,22kg/m². Lower levels of TG (138.1 to 74.6, -63.5), LDL (109.2 to 96.0, -13.2) mg/dL, ALP (45.6 to 24.9, -21.7)U/L, GGT (40.0 to 14.9, -25.1) mg/dL, HbA1c (5.66 to 5.09, -0.57)%, BI(13.7 to 6.8, -6.9)uIU/mL, FG (86.8 to 76.0, -10.8)mg/dL, uric acid (5.9 to 4.9, -1.0)mg/dL and CRP (0.46 to 0.22, -0.24) were observed after therapy. HDL did not change significantly. **Conclusions:** Metabolic syndrome, as a result from a

chronic exposure to a sub-clinical inflammation due to obesity, can be completely resolved by a multimodal therapy that targets excess weight loss, shown by significant inflammatory and metabolic markers reductions. A more intensive and comprehensive obesity therapy, addressing all aspects of obesity issues may be an effective way to improve outcomes.

T-P-LB-3848

A quadruple anti-diabetic association may present significant results in patients unresponsive to diet and exercise.

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Background: Off-label therapies, if done with safe drugs, are acceptable for patients who do not respond or cannot use on label drugs. Once mechanisms of action are known, synergic associations may be a possibility to boost weight loss. In an obesity intervention that drugs are offered together with diet, exercise, surveillance and psychotherapy when needed, part of patients cannot be prescribed central action drugs, due to psychiatric or self-acceptance reasons. In these cases, peripherally targets when considering drugs should be considered. In this protocol, a quadruple combination of SGLT2 inhibitor (iSGLT2), GLP-1 analogue (aGLP-1), metformin (biguanide) and orlistat (lipase inhibitor, now considered an anti-diabetic drug), was offered to these patients, with they presented a BMI>27kg/m². **Methods:** Patients who were refractory to diet and physical activity and started the quadruple combination with no other prescription, and follow up between six month and two year, were included. Body weight(BW), waist circumference (WC), visceral fat (VF), BMI, muscle weight (MW), fat weight (FW), HbA1c, basal insulin(BI), basal fasting glucose(FG), triglycerides (TG), LDL, ALP, GGT and CRP were evaluated. Validated bioimpedance (inBody770) and plythysmograph (Bod Pod) were used for analysis **Results:** Analysis were made in 28 subjects. Lower levels were seen in BW (96.2 to 82.5; -14.7)kg, WC (106.8 to 90.4; -16.4)cm, VF (155.4 to 68.3; -87.1)cm², BMI (33.1 to 28.4; -4.7)kg/m², MW (35.3 to 33.2; -2.1)kg, FW (58.6 to 45.2; -14.4)kg, HbA1c (5.57 to 4.71, -0.86)%, BI(19.7 to 7.2, -12.5)uIU/mL, FG (90.1 to 75.9, -14.1)mg/dL, TG (133.3 to 58.3, -75.0), LDL (108.4 to 92.7, -15.7) mg/dL, ALP (42.0 to 17.7, -24.3)U/L, GGT (34.1 to 16.7, -17.4) mg/dL and CRP (0.61 to 0.25, -0.36)mg/L **Conclusions:** Significant clinical and biochemical results were seen in these patients. Off-label therapies can boost obese patients and should be offered to patients who do not respond or cannot use other drugs.

T-P-LB-3849**A powerful probiotic can improve fat weight loss in refractory patients.**Flavio Cadegiani *Brasilia DF*

Background: The roles of gut microbiota and bowel in the pathogenesis of obesity and insulin resistance have been increasingly recognized. A health gut plays an important role in insulin sensitivity and body weight maintenance. Unhealthy meals can change microbiota to pathogenic strains that increase insulin resistance and body inflammation. Obese people tend to have a different gut microbiota than normal weight subjects. Early studies show a trend to weight loss when obese patients are exposed to usual strains of lean subjects. A probiotic compounded of high quantities of strains that showed more weight loss or insulin levels decrease was given to patients unresponsive to diet, exercise and drugs to evaluate the response. In this study, results from this implementation are shown. **Methods:** Patients included were those who did not respond enough to diet, exercise and drugs (body weight loss **Results:** 37 patients were evaluated in a mean follow up of 4.2 months. Significant reductions in BW (108.0 to 99.8; -8.2)kg, WC (116.2 to 102.5; -13.7)cm, BMI (36.8 to 34.0; -2.8)kg/m², FW (50.5 to 43.6; -6.9)kg, BI(25.8 to 10.7, -15.1)uUI/mL and FG (94.8 to 80.5, -15.3)mg/dL were observed. From these subjects, 14 lost more than 10% (37.8%) and 28 lost more than 5% (75.7%) of BW. **Conclusions:** If well selected (patients with real unresponsiveness to therapies and hyperinsulinemia), patients may benefit from a potent probiotic to help boost weight loss.

T-P-LB-3850**The clinical course of severe obesity and Major Depressive Disorder in Bariatric Surgery patients: A retrospective pilot study as a part of the Toronto Obesity Psychosocial Cohort Study.**Gurneet Thiara *Toronto Ontario*, Susan Wnuk *Toronto Ontario*, Allan Okrainec *Toronto ON*, Raed Hawa *Toronto Ontario*, Roger McIntyre *Toronto ON*, Sanjeev Socalingam *Toronto Ontario*

Background: Although studies have established a bidirectional relationship between obesity and major depressive disorder (MDD), limited data exists on the impact of MDD depression versus obesity onset on depression course in severely obese samples. Objectives: To determine whether the temporality of onset of MDD and obesity impacts MDD clinical outcomes in bariatric surgery candidates. **Methods:** Setting: Participants were

recruited as a part of the Toronto Obesity Psychosocial Cohort database. Participants (N = 157) were selected from a larger prospective study based on these inclusion criteria: diagnosis of MDD or bipolar disorder (BD), age ≥ 18 years and ability to provide informed consent. Onset of obesity and MDD were collected using a standardized clinical interview during the pre-surgery assessment process. Data collected included demographic data and onset of obesity (BMI > 30) and initial depressive episode. Collected MDD course and severity outcomes included the number of psychiatric hospitalizations, major depressive episodes (MDE), current psychiatric medications, lifetime suicide attempts and current quality of life (SF36). Outcomes were compared between patients who initially developed depression (MDDI) and patients who initially developed obesity (OBESEI) using a Wilcoxon Rank Sum test for continuous variables and Fishers Exact test for categorical variables.

Results: 110/157 (n=70.6%) participants were OBESEI.Participants with MDDI were more likely to have an increased number of lifetime MDE (4.64 ± 8.47 vs. 2.63 ± 5.78 , p**Conclusions:** MDDI had significantly higher number of lifetime MDE and prescribed psychiatric medications. Early intervention of MDD may change the clinical course for bariatric surgery candidates.**T-P-LB-3851****Polyunsaturated fat diet induces obesity, but not insulin resistance or impaired access to muscle**Josiane Broussard *Boulder CO*, Isaac Asare Bediako *Los Angeles CA*, Rebecca Paszkiewicz *Los Angeles CA*, Malini Iyer *Los Angeles California*, Richard Bergman *Los Angeles CA*, Cathryn Kolka *Los Angeles California*

Background: Diets high in saturated fat induce obesity and insulin resistance as well as impair insulin access to skeletal muscle. In contrast, diets supplemented with polyunsaturated fat (PUFA) improve insulin sensitivity and reduce the risk for type 2 diabetes. We therefore hypothesized that a diet high in PUFA will increase insulin sensitivity and improve insulin access to muscle in the canine. **Methods:** Hyperinsulinemic euglycemic clamps were conducted after 12 weeks of a high fat diet supplemented with 6g/kg of saturated fat (Lard, n=11) or salmon oil (PUFA, n=8) to assess insulin sensitivity and insulin access to skeletal muscle. Lymph was used as a measure of skeletal muscle interstitial fluid. **Results:** Lard and PUFA diets induced similar weight gain (+5%, Lard; +7%, PUFA). Insulin sensitivity was impaired in Lard dogs as compared to Lean controls (Lean, n=8, 11.1 ± 1.0 mg/min/kg, Lard 8.0 ± 0.7 , P=0.03) but not in the PUFA group (11.8 ± 1.2). The

Lard group displayed higher arterial plasma insulin levels at fasting (Lard 7.6±1.1 vs Lean 4.1±0.5µU/ml, P=0.05; PUFA 4.6±1.2µU/ml, ns) and during insulin infusion (Lean 75.5±6.4, Lard 95.7±5.4 P=0.03 vs Lean, PUFA 79.3±5.3µU/ml, ns). However, lymph insulin levels were not different (Lean 52.6±4.9, Lard 53.1±4.3, PUFA 57.5±4.2µU/ml), suggesting impaired insulin access with Lard feeding. Lard also impaired muscle tissue insulin sensitivity (Lean 3.4±0.4, Lard 2.2±0.3, p=0.03), which did not occur with PUFA (3.5±0.6). **Conclusions:** While both high-fat diets induced a similar amount of weight gain, only Lard led to a reduction in insulin sensitivity. In addition, hyperinsulinemia did not translate to an increase in interstitial insulin, suggesting reduced insulin access after Lard feeding. We conclude that obesity per se does not cause insulin resistance, and that a diet high in saturated fat impairs insulin access to muscle. Future studies are needed to determine whether PUFA supplementation in conjunction with a Lard diet may protect against insulin resistance.

T-P-LB-3852

Rapid Changes in the Proteome of Gut Microbiota in Response to Short-Term Dietary Challenges in Baboons (*P. hamadryas*)

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Background: Obesity is a complex multifactorial disease, and recent studies have shown that changes in gut microbiome composition are correlated with obesity-related traits in humans and mouse models. However, it is unclear how quickly the abundance of the various bacterial species changes in response to controlled diet changes. We explored whether a comprehensive analysis of proteins from fecal samples reveals functional and metabolic changes in gut microbes. **Methods:** Baboons normally fed a standard chow diet were given a high-saturated fat, high-simple carbohydrate diet (HFHS) for seven weeks. Fecal samples were collected at weeks 0 and 7. Fecal samples were analyzed using shot-gun proteomics, to identify individual proteins and species. Differences in protein abundance were quantified, and only species with at least 3 significantly altered proteins were included. **Results:** Our metaproteomic data show the most detected proteins from phylum Bacteroidetes (genus *Prevotella*), from phylum Firmicutes and from Actinobacteria. Short term exposure to a HFHS diet led to significant proteomic changes in multiple bacterial species. In *Eubacterium* bioforme, proteins involved in carbohydrate metabolism were decreased, but in *Eubacterium hallii*, these proteins were increased at least two fold indicating that

different bacterial species from the same genus react differently to the change in diet. *Prevotella copri* showed a decrease in carbohydrate metabolism proteins while proteins involved in nucleotide transport and protein synthesis machinery such as DNA-directed RNA polymerase and ribosomal proteins were increased in response to the HFHS diet in *Prevotella copri* and *Collinsella aerofaciens*. **Conclusions:** These unique responses of individual microbial species cannot be detected using traditional microbial metagenomic sequencing, and may help elucidate the underlying mechanisms mediating the impact on obesity, and potentially leading to perturbations in gut microbiome composition.

T-P-LB-3853

Long-term Western Style Diet (WSD) Blocks the Beneficial Metabolic Effects of Immediate Estradiol (E) Replacement in Older Surgically Menopausal Macaques

Cynthia Bethea *Beaverton OR*, Jonathan Purnell *Portland Oregon*

Background: Clinical trials of post-menopausal women showed that E replacement therapy (ERT) may prevent central obesity and lower diabetes risk, but definitive prospective data are lacking. We established a nonhuman primate model of human menopause and hypothesized that immediate ERT would ameliorate effects of WSD. **Methods:** Female rhesus macaques (17-20yrs) were placed on WSD and ovariectomized 6 weeks later. Empty Silastic capsules (placebo n=13-17) or capsules containing crystallized E (n=6-8) were implanted s.c. At baseline (prior to WSD) and at 6, 12 and 18 months (mo) after OVH±ERT, glucose tolerance tests (GTTs) and DEXA scans for fat mass (FM) were performed. Endpoints were compared with ANOVA. **Results:** Glucose and insulin excursions during GTT were the same between the groups prior to WSD. At 6 mo, glucose clearance was faster in the E-treated group than in the placebo group (p **Conclusions:** WSD reduced the beneficial effects of ERT on glucose metabolism and body composition with time past OVH.

T-P-LB-3854

Geometrical representation of the human body provides new insights into body fat distribution

Kateryna Mykhaylova *Cedar Knolls New Jersey*

Background: Visceral adiposity is a major risk for metabolic disease. While both abdominal adiposity and body shape indices correlate with visceral adiposity, how much of the variance in visceral adiposity is due to the separate independent effects of trunk size (total abdominal adiposity) versus trunk shape (apple

versus pear-shapes) is unknown. To evaluate the role of trunk shape versus trunk size on visceral adipose tissue, we introduce two new indices of Trunk Size (TSZ) and Trunk Shape (TSH) based on a geometrical model that quantifies body roundness.

Methods: To evaluate the role of TSZ and TSH on visceral adiposity, three separate databases containing MRI and DXA measured total percent body fat and total visceral adipose tissue were pooled. Our new indices were additionally compared against six previously established metrics: Hip Circumference (HC), Waist Circumference (WC), Waist Hip Ratio (WHR), Body Mass Index (BMI), Body Adiposity Index (BAI), A Body Shape Index (ABSI). Using the statistical software package in JMP® Pro 11.0.0, we developed eight regression models—one for each index—that predicts % VAT. Interaction terms and covariates were included in the models, and the overall adjusted R² and term specific p-values were calculated. **Results:** Linear regression modeling showed that a number of different covariates were statistically significant predictors of visceral adipose tissue. Analysis revealed that Trunk Size (TSZ) (R² = 0.48) explained much more of the variance in visceral adipose tissue than Trunk Shape (TSH) (R² = 0.33) Of the models examined, the linear regression model with TSH and TSZ and ethnicity, age and gender was the superior model for explaining differences in % VAT (R² = 0.62, P = 0.035)

Conclusions: For the first time, we demonstrate that trunk size is far more important than trunk shape in explaining visceral adipose content. The new variables of TSH and TSZ represent important considerations for predicting visceral adipose tissue and likely also obesity-related co-morbidities