**PP1**  
**DIABETIC TERATOGENESIS AND VITAMIN E PREVENTION IN THE RAT. EVOLUTION ALONG PREGNANCY.**

Nuñez N (1), Gorrita Y (1), Fernandez T (1), Clapés S (1), Herrera M (1), Suarez G (1), Rodriguez V (1), Rodriguez O (1), Soca M (1), Alcalá M (2), Bolado VE (2), Sánchez-Vera I (3), Viana M (2)

Universidad de Ciencias Médicas de la Habana. ICBP “Victoria de Girón”, La Habana, Cuba (1)
Facultad de Farmacia (2), Facultad de Medicina (3) Universidad San Pablo CEU. Madrid, Spain

**Background:** Diabetes during pregnancy produces an increase in the rate of embryo malformations. Several metabolic alterations or increased oxidative stress could be involved. Previously we have shown that administration of vitamin E to pregnant diabetic rats decreases the rate of embryo malformations and increases their maturation and size. The aim of the present study was to determine the effect of vitamin E in the development of fetus in late pregnancy of diabetic rats.

**Methods:** Female Wistar rats were made diabetic with streptozotocin, and from day 0 of gestation until day 11.5 day (11DE group) or 20 day (20DE group) they were supplemented with 150 mg of vitamin E, administered by gavage. In parallel we perform another groups of diabetic rats without any supplementation (11D and 20D), and all of them were compared with non diabetic animals (11C and 20 C). The embryos from 11.5 day (11DE, 11D and 11C groups) and the fetus form 20 day (20DE, 20D and 20C groups) were dissected and the rate of malformation was recorded. Embryos/fetus not conforming to normal morphology was considered malformed.

**Results:** The rate of embryo malformations in the 11D group was 50.0%, compare with the 4.9% in the 11C group. After vitamin E administration the rate decreased to 13.9%. The same effect was observed in the rate of reabsorptions (11D: 24.7%; 11C: 6.8% and 11DE: 12.9%). When day 20 fetuses were analyzed we observed a reduction in the rate of malformations in all the groups (20D: 5.2%, 20C:0%; 20DE: 6.6%) not foundind differencies between 20D and 20DE group. But we found a clear increased in the death fetus in 20D (10,4%) compared with the 20DE group (5,1%) which reached similar values to 20C group (5,4%). After studied craniofacial, cardiovascular, neural tube defects, kidney, gut alteration in day 20 of pregnancy fetus, we found the highest rate in cardiovascular alterations in diabetic rats, meanwhile in 11.5 day of pregnancy, we only were able to detect neural tube defects. **Conclusions:** Administration of vitamin E to diabetic pregnant rats decreases the rate of embryo (neural tube defects) and fetus (cardiovascular alterations) malformations, decreasing the rate of reabsorptions on 11.5 day, and increasing the number of alive fetus on day 20 of pregnancy.

**PP2**  
**FRACTIONAL VOLUME OF PLACENTAL VESSELS IN WOMEN WITH AND WITHOUT DIABETES USING A NOVEL STEREOLOGICAL 3D POWER DOPPLER ULTRASOUND TECHNIQUE.**

Jones NW (1,2), Bradley E (1), Deshpande R (1,2), Mansell P (1,2), Raine-Fenning N (2), Bugg G (1)

(1)Nottinering University Hospitals NHS Trust, (2)University of Nottingham, Nottingham, UK

**Introduction:** In maternal diabetes the placenta is large with abnormal vascular development and increased villous volume.

**Aims:** To use a novel stereological 3D power Doppler ultrasound technique to investigate differences in vivo in the fractional volume of placental blood vessels (FrVolBV) between women with and without diabetes.

**Methods:** We recruited 20 normal women and 17 with pre-gestational diabetes, with anterior placentae matched for age, BMI and parity. Each subject had scans every 4 weeks between 20 and 32 weeks gestation using a Voluson 730 Expert scanner. The placenta was outlined using the VOCAL tool within 4D View (GE Medical Systems). Power Doppler signal within this volume was counted in a three-dimensional manner adapting the random but systematic techniques used in stereology.

**Results:** The mean (SD) placental FrVolBV was higher in the non-diabetic than in the diabetic group at each gestation; 0.144 (0.05) versus 0.104 (0.03) at 20 weeks, 0.145 (0.05) versus 0.128 (0.03) at 24 weeks, 0.159 (0.05) versus 0.133 (0.02) at 28 weeks and 0.154 (0.03) versus 0.123 (0.04) at 32 weeks. There was a significant difference in FrVolBV between normal and diabetic subjects [F(1,31)= 5.396, p=0.027] and across gestation [F(3,93)= 3.633, p=0.016].

**Conclusion:** Using novel stereological techniques we have shown that placental FrVolBV is reduced in women with diabetes, at least from 20 weeks gestation. This contrasts with the known increase in volume of the villous...
vasculature determined histologically. Structural changes in the large and apparently vascular placenta are therefore accompanied by altered function, with reduced perfusion demonstrable in-vivo.

**PP3***

HIGH PREVALENCE OF ABNORMAL GLUCOSE TOLERANCE POSTPARTUM IS REDUCED BY BREAST-FEEDING IN WOMEN WITH PRIOR GESTATIONAL DIABETES MELLITUS

O'Reilly MW, Avalos G, Dennedy MC, O'Sullivan EP, Dunne F
Department of Medicine, National University of Ireland and University College Hospital, Galway, Ireland.

**Background and aims:**
Gestational diabetes (GDM) is associated with adverse fetal and maternal outcomes. It identifies women at risk of pre-diabetes, type 2 diabetes (T2DM) and cardiovascular risk in later life. Recent studies have suggested that breastfeeding may confer a beneficial effect on postpartum maternal glucose tolerance in both women with GDM and normal glucose tolerance (NGT) in pregnancy.

**Materials and methods:**
We compared results from 300 women with GDM and 220 women with NGT according to IADPSG criteria using a 75g oral glucose tolerance test (OGTT) at 24-28 weeks gestation by repeating the 75g OGTT postpartum to reassess glucose status. We also tested for postpartum metabolic syndrome (MetS) according to international criteria. Binary logistic regression was used to identify maternal factors that increased the risk of persistent glucose intolerance. Postpartum lactation status was categorised as breastfeeding alone, bottle-feeding alone, or both.

**Results:**
520 women were tested. OGTT results were classified as normal (FPG<5.6mmol/l; 2h<7.8mmol/l) or abnormal (IFG; 5.6-6.9, IGT; 2h 7.8-11.0, IFG+IGT; T2DM FPG≥7 ± 2h≥11.1). Six of 220 (2.7%) women with NGT in pregnancy had postpartum dysglycaemia compared to 57 of 300 women (19%) with GDM in pregnancy (P<0.001). Non-Caucasian ethnicity (OR 3.40, 95% CI 1.45-8.02, P=0.005), family history of T2DM (OR 2.14, 95% CI 1.06-4.32, P=0.034) and insulin use in pregnancy (OR 2.62, 95% CI 1.17-5.87, P=0.019) were all predictive of persistent dysglycaemia. MetS was present postpartum in 31 of 300 women (10.3%) with GDM compared to 18 (8.2%) of 220 women with NGT (P=0.4). The prevalence of persistent dysglycaemia was lower in women who breast-fed versus bottle-fed their babies, or employed both techniques (7.1% v 18.4% and 11.2%, respectively, p<0.001).

**Conclusion:**
In this Irish population the prevalence of persistent glucose intolerance in women with GDM in pregnancy is 19% compared to 2.7% in NGT women. Breast-feeding confers a beneficial effect on postpartum glucose tolerance. The precise mechanism behind this association is unclear and requires further study.

Table 1: Prevalence of persistent postpartum dysglycaemia according to breast-feeding status

<table>
<thead>
<tr>
<th>Breast-feeding status</th>
<th>Prevalence of persistent dysglycaemia (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breast-fed only n=212</td>
<td>15 (7.1%)</td>
</tr>
<tr>
<td>Bottle-fed only n=201</td>
<td>37 (18.4%)*</td>
</tr>
<tr>
<td>Breast+bottle n=107</td>
<td>12 (11.2%)</td>
</tr>
</tbody>
</table>

*P<0.001

**PP4***

GESTATIONAL DIABETES MELLITUS RESULTS IN A HIGHER PREVALENCE OF SMALL FOR GESTATIONAL AGE BABIES

Dunne F, Owens LA, Avalos G, Dennedy C, O'Sullivan EP, O'Reilly M
Department of Medicine, National University of Ireland, Galway, Galway, Ireland.

**Background and aims:** Gestational Diabetes Mellitus (GDM) is associated with increased foetal and maternal morbidity and mortality. Previous studies have shown that babies of diabetic mothers are more likely to be large
for gestational age (LGA). This retrospective study aimed to assess whether the converse may also be true, that there may also a higher rate of small for gestational age (SGA) amongst babies of mothers with GDM.

**Materials and methods:** This retrospective study offered universal screening for GDM to pregnant women in 5 hospitals between 2007-2009. During this time 5,500 women underwent testing for GDM using a 75g Oral Glucose Tolerance Test at 24-28 weeks gestation. GDM was defined by the International Association of the Diabetes and Pregnancy Study Groups guidelines (IADPSG).

**Results:** The prevalence of GDM was 12.4%. 4.5% of babies were small for gestational age (SGA) at birth in live births. Babies of mothers with GDM were more likely to have SGA than babies of non-diabetic women, OR 1.5, p=0.03, 95% CI {1.02-2.24}. Mean Body Mass Index (BMI) was lower in mothers of SGA babies than mothers of babies who were average (AGA) or large for gestational age (LGA), 26.3 compared to 27.1, p<0.0001. Smoking (OR 3.1, p=0.000) pre-eclampsia (OR 3.99, p=0.000), low parity (OR 0.8, p= 0.005), non-Caucasian ethnicity were also predictive of SGA. These SGA babies had a worse clinical outcome, including: higher caesarean section rate, higher requirement for neonatal intensive care, higher rates of hypoglycaemia and respiratory distress. 76% of diabetic women were treated with insulin. Insulin treatment did not affect rates of SGA when compared with dietary management.

**Conclusion:** This study shows another important negative outcome associated with GDM. Further research is required to identify the causative factor(s).

**PP5**
ATLANTIC DIP: A REGIONAL APPROACH TO THE DELIVERY OF CARE RESULTS IN IMPROVED PREGNANCY OUTCOMES IN WOMEN WITH PRE-GESTATIONAL DIABETES MELLITUS.

Dunne F, Avalos G, Carmody L, Kirwin B, Todd M, Gallacher T, Gaffney G, Durkan M, Mc Hugh C; for the ATLANTIC DIP Collaborators
1. Department of Diabetes, Galway University Hospital, National University of Ireland, Galway, Ireland
2. Department of Obstetrics and Gynaecology, National University of Ireland, Galway, Ireland

**Background and aims:** The Atlantic Diabetes in Pregnancy (DIP) group established in 2005 represents 5 antenatal centres in a wide geographical location. The group provides care for women with diabetes before and during and after pregnancy. We examined the outcomes of pregnancy in 2 periods (2005-2007) and (2008-2010) before and after the implementation of a region wide approach to delivery of care. The process of care changed from stand alone clinics with different personnel to integrated pre-pregnancy (PPC) and combined diabetes antenatal clinics in a hub and spoke fashion supported by an electronic data collection system, clinical care guidelines, professional education and patient education materials.

**Materials and Methods:** Maternal (Glycated Haemoglobin (HbA1C), attendance at PPC, uptake of folic acid, Caesarean Section (CS) rates) and fetal/neonatal (miscarriage, stillbirth and perinatal mortality, admission to neonatal unit and birth weight >4kg) outcomes were recorded.

**Results:** 104 and 152 pregnancies (23% and 30% Type 2) occurred in periods 1 and 2 respectively. Attendance for PPC increased from 28% to 53%, uptake of folic acid from 43% to 57%, and % of women with glycated haemoglobin at booking <7% increased from 51% to 60% between the 2 periods. In addition HbA1C decreased across all trimesters for women with both type 1 and type 2 diabetes over time. Elective CS rate increased from 18% to 41% with no change in the emergency CS rate. The take home baby rate increased from 76% to 89% and miscarriage/deaths<24 weeks decreased from 22% to 11%. The stillbirth and perinatal mortality rates both decreased from 25 to 15/1000, admission to neonatal unit decreased from 63% to 57% and % of babies >4kg decreased from 32% to 24%.

**Conclusion:** A regional approach to the delivery of care has resulted in better pregnancy preparation for the mother and better neonatal outcomes as a consequence, resulting in a higher take home baby rate. The higher elective CS rate needs to be addressed.

**PP6**
DEVELOPMENT OF A BIRTHWEIGHT PREDICTION MODEL COMBINING OGTT GLUCOSE AND BODY MASS INDEX IN WOMEN IN THE AUSTRALIAN HAPO COHORT

McIntyre HD, Gibbons K, Lowe J, Oats J; for the HAPO Collaborators
1. Mater Health Services, Australia
2. University of Queensland, Australia
3. University of Newcastle, Australia
4. University of Melbourne, Australia

The Hyperglycemia and Adverse Pregnancy Outcome (HAPO) study demonstrated independent relationships between maternal glycemia measured at the diagnostic oral glucose tolerance test (OGTT) and maternal
body mass index (BMI) and fetal size at birth. Using data from Caucasian women in the Australian HAPO cohort (n = 1778), we have developed statistical models to predict birthweight, expressed both as a continuous variable (birthweight Z score corrected for gender and gestational age [GA] against local standards) and as risk of large for gestational age (LGA) infants (birthweight > 90th centile for gender and GA). Statistical methodologies comprised multiple linear regression for predicting birthweight Z score and multivariate logistic regression for predicting LGA risk. Accepted birthweight “predictors” - maternal age, height and parity were included in both models. Variables were mean centred and glucose values were normalised.

In the continuous model, maternal characteristics including OGTT values and BMI accounted for approximately 10% of the observed variance in corrected birthweight (adjusted $R^2=0.10$). Maternal age, height, BMI, parity and OGTT glucose values all remained significant in the model. In logistic regression, overall prediction of LGA using BMI and OGTT values was statistically significant ($\chi^2=97$, p<0.0001) but also relatively weak. Both maternal BMI and OGTT glucose values identify groups of women who are at risk of excessive fetal growth. However, they remain relatively weak predictors of birthweight, expressed either as Z score or risk of LGA, in individual women. Whilst we are potentially able to provide individualised growth curves for babies, corrected for maternal BMI and OGTT values, the clinical utility of these is not yet evident. Future work will attempt to extend these predictive models to other pregnancy outcomes, including relative fetal adiposity (which may be a more sensitive marker of metabolic influences).

**PP7**

**MATERNAL GLYCAEMIA DURING PREGNANCY AND ANTHROPOMETRY IN 5-7 YEAR OLD OFFSPRING: THE BELFAST HAPO FAMILY STUDY**

McCance DR, McKenna S, McLaughlin C, Pettitt DJ, Hadden DR, Thaware P, Patterson CC
The Royal Victoria Hospital and Queen’s University Belfast UK; Sansum Diabetes Research Institute, Santa Barbara, CA USA

Diabetes during pregnancy is a strong risk factor for obesity in the offspring, but the impact of maternal hyperglycaemia, short of diabetes, is less well understood. Among Pima Indians, a linear relationship was reported between glucose concentrations during pregnancy and the child’s weight after age 5 years even if the mother did not have diabetes, but whether this will be a universal finding is unknown. The purpose of this interim analysis was to examine the relationship between maternal OGTT glucose levels performed at an average of 28 weeks gestational age (GA) and anthropometric measurements in their 5-7 year old offspring. Women (Caucasian) were those recruited in the Belfast UK centre of the Hyperglycaemia and Adverse Pregnancy Outcome Study.

822 offspring were followed up at mean [SD] 6.6 [0.4]y, range 5.6-7.7y. Birth weight standard deviation score (SDS), specific for GA, was categorized into small (<10th) and large (>90th) centile for GA respectively. Offspring measurements at birth included weight, height and thickness of triceps, subscapular and suprailiac skin folds. Offspring overweight and obesity at 5-7 y were defined as BMI (SDS) ≥ 85th and 95th centiles respectively and fatness as > 90th percentile of sum of skin folds (SSFT).

Overweight and obesity at 5-7y were observed in 23.1% and 9.9% of the boys and 23.3% and 12.9% of the girls respectively (NS). SSFT was greater in girls than boys: 28.6 vs 22.3 (p< 0.001). Increasing categories of maternal 28 week OGTT fasting glucose were associated with overweight (p=0.036) (p value for trend) and obesity (p=0.022) in the offspring, but no significant associations were found between these parameters and either 1h or 2h maternal OGTT glucose. Overall correlations between maternal fasting glucose and offspring BMI SDS at 5-7y were weak and of little clinical significance. Increasing birthweight was associated with overweight (p=0.008) but not obesity or SSFT in the offspring at 5-7y. There was a trend towards an association between sum of skin folds at birth and overweight (p=0.054) and obesity (p=0.091) at 5-7 y but not fatness.

Birthweight SDS (0.132 BMI SDS units per birthweight SDS unit; p=0.005) and maternal BMI (0.057 BMI SDS units per kg/m²; p=0.0000) were the only variables independently predictive of offspring BMI SDS on multivariate regression analysis which included age, sex, fasting glucose and neonatal SSFT. This study found little association between the mother’s glucose during pregnancy and the child’s measurements of obesity at this young age.

**PP8**
US-GUIDED vs CONVENTIONAL TREATMENT OF NON-SELECTED GDM WOMEN: SYSTEMATIC REVIEW AND META-ANALYSIS

Balsells M¹, Garcia-Patterson A², Gich I³, Corcoy R²
¹Endocrinology Department, Hospital Universitari Mutua de Terrassa
²Endocrinology Department, Hospital de la Santa Creu i Sant Pau, Barcelona
³Clinical Epidemiology Departament, Hospital de la Santa Creu i Sant Pau, Barcelona

Background: The 5th Workshop-Conference on GDM has pointed out that modification of metabolic management based on fetal growth measurements may improve perinatal outcome or at least be equivalent to standard intensified management. In one article, women in the US arm used less insulin and it has been suggested that this strategy might simplify the management of low risk pregnancies.

Aim: To perform a systematic review and meta-analysis of randomized controlled trials evaluating US-guided (US-G) vs Conventional (C) treatment of non-selected women with GDM.

Methods: A Medline search was performed using the terms “Gestational” AND “Ultrasound” AND “Trial” with no limits. Two independent investigators reviewed the abstracts, full-text papers and extracted data. Revman 5.0 was used to summarize outcomes (weight gain, maternal hypertension, cesarean section, gestational age, birth weight, large and small-for-gestational age newborns, NICU stay, neonatal hypoglycemia, insulin treatment).

Results: Forty-three abstracts were identified, 4 of them randomized controlled trials, only two of them addressing non-selected GDM women. Overall 428 women were included, 250 randomized to US-G and 178 to C. In US-G, improvements were observed in the rates of LGA (8.7 vs 14.9%, RR 0.58, CI95 0.34-0.99), abnormal birth weight (16.9 vs 27.4%, RR 0.64, CI95 0.45-0.93) and macrosomia (3.3 vs 10.3%, 0.32, CI95 0.11-0.95). The rate of SGA (8.3 vs 12.6%, RR 0.73, CI 95 0.41-1.29) was non-significantly different as was the case for all other reported obstetric and neonatal outcomes. The rate of insulin treatment was significantly higher in US-G (33.9 vs 22.9%, RR 1.55, CI95 1.12-2.16).

Conclusion: In non-selected GDM women, US-G management improves birth weight outcomes (LGA, abnormal birth weight and macrosomia) but the overall rate of insulin treatment increases.

PP9*

PHYSICAL ACTIVITY DURING PREGNANCY IN NORMAL-WEIGHT AND OBESE WOMEN ASSESSED BY Pedometer

Renault K, Nørgaard K, Andreasen KR, Secher NJ and Nilas L
Hvidovre Hospital, Copenhagen, Denmark

Objectives: To compare physical activity in normal-weight and obese women before and during pregnancy and to describe compliance using pedometer in these women.

Design: Prospective study.

Setting: Department of Obstetrics and Gynecology in a university hospital.

Population: 140 pregnant women, 70 normal-weight with Body Mass Index (BMI) 20-25 kg/m² and 70 obese with BMI ≥ 30 kg/m².

Methods: Pre-pregnancy physical activity was assessed by questionnaire. During pregnancy physical activity was assessed by pedometer (Yamax Digiwalker SW-700/701) on seven consecutive days every fourth week from week 13. Variation in the activity during pregnancy was tested by ANOVA and interaction analysis.

Main Outcome Measures: Level and variation in physical activity assessed by pedometer and compliance with wearing the pedometer during pregnancy in normal weight and obese women.

Results: Obese women were less physically active than normal weight women before (p<0.05) and during pregnancy (p<0.0012). The median number of steps in week 13 was 6482 (4640-8645) steps/day in obese women and 7558 (6416-9367) steps/day in normal weight women. The variation in physical activity in the total group could be described by a significant interaction between BMI group, gestational age (p<0.007) and day of the week (p<0.001). Physical activity was lower in the weekends than on workdays and declined during pregnancy in both groups. The first step recordings were returned by 64/70 normal weight women and 59/70 obese women, and compliance gradually declined during gestation. Only respectively 45/70 and 22/70 of the women completed all measurement until week 33.

Conclusion: Pedometer-assessed physical activity is lower in obese than in normal-weight women in pregnancy and declines in both groups during pregnancy. The pedometer is an acceptable tool for monitoring daily physical activity in pregnant women, but strategies to increase compliance are needed.
**PP10**

**INCREASED NITRIC OXIDE PRODUCTION AND GENDER-DEPENDENT CHANGES IN PPARα EXPRESSION AND SIGNALLING IN THE FETAL LUNG FROM DIABETIC RATS.**

Kurtz M, Martinez N, Capobianco E, White V and Jawerbaum A

Laboratory of Reproduction and Metabolism. CEFYBO-CONICET. School of Medicine, University of Buenos Aires, Buenos Aires, Argentina.

Maternal diabetes is associated with a wide range of adverse effects in fetal organs, including the lung. Nitric oxide (NO) is involved in lung morphogenesis and a pro-inflammatory environment is related to its overproduction. PPARα signalling has anti-inflammatory properties in several tissues, including the lung.

The aim of this work was to evaluate putative alterations in the expression and activity of PPARα, the production of NO and the expression of the inducible form of NO synthase (iNOS) in the lung from female and male fetuses from diabetic rats.

**Methods:** Diabetes was induced by neonatal streptozotocin administration (90 mg/kg). Fetuses from control and diabetic females were explanted on day 21 of gestation. To activate PPARα, its endogenous ligand LTB₄ (0.1 µM) was injected in fetuses on days 19, 20 and 21 of pregnancy, and the fetal lung explanted on day 21 of pregnancy.

**Results:** We found that fetuses, placentas, and fetal lungs from diabetic rats have increased weight (p<0.05). Nitric oxide production was similar in fetal lungs from male and female fetuses, and was increased in both male and female fetal lungs from diabetic rats (p<0.05). PPARα expression was similar in fetal lungs from male and female fetuses, and was reduced only in male fetuses from diabetic rats (p<0.001). When PPARα was activated in the fetuses by its endogenous ligand, we found that the weight of the fetal lungs was reduced in the diabetic group (p< 0.05), the expression of PPARα was enhanced only in the lung from female fetuses from diabetic rats, and iNOS expression was reduced both in male and female fetuses from diabetic rats.

**Conclusion:** Maternal diabetes leads to gender-specific defects in PPARα expression and signalling, although its activation can reduce the expression of iNOS in both female and male fetuses. Nitric oxide is overexpressed in the fetal lung from diabetic rats, an alteration that possibly affects fetal lung development and growth and that could be prevented by PPARα activation.

**PP11**

**GESTATIONAL DIABETES MELLITUS CAUSES CHANGES IN THE CONCENTRATION OF ADIPOCYTE FATTY ACID-BINDING PROTEIN AND OTHER ADIPOCYTOKINES IN CORD BLOOD**

Ortega-Senovilla H¹, Schaefer-Graf U², Meitzner K², Abou-Dakn M², Graf K², Kintscher U² and Herrera E¹

¹Faculties of Pharmacy and Medicine, University CEU San Pablo, Madrid, Spain, and ²Berlin Center for Diabetes in Pregnancy, Dept. of Obstetrics and Gynecology, St. Joseph’s Hospital, Berlin, Germany.

**OBJECTIVE** - To determine the concentrations of adipocyte fatty acid-binding protein (AFABP) and other adipocytokines in maternal and cord serum of pregnant women with gestational diabetes mellitus (GDM) and of controls, and to relate them to indices of insulin sensitivity.

**RESEARCH DESIGN AND METHODS** - In 86 control and 98 GDM pregnant women, venous blood was collected before vaginal delivery and arterial blood from cord immediately after delivery. Serum insulin and adipocytokines were measured by ELISA.

**RESULTS** - GDM women had higher pre-pregnancy BMI, and data were adjusted for it. Maternal serum insulin, insulin/glucose ratio, HOMA, AFABP and retinol-binding protein 4 (RBP4) were higher and adiponectin was lower in GDM than in controls, whereas serum glucose, insulin, insulin/glucose ratio, HOMA, non-esterified fatty acids and RBP4 were higher and glycerol, AFABP and adiponectin were lower in cord blood serum of GDM than of controls. AFABP and adiponectin in cord serum of controls were higher than in maternal serum; in GDMs no difference was found for AFABP in cord vs. maternal serum, although adiponectin remained higher in cord. Values of leptin in both groups were lower in cord than in maternal serum, and those of RBP4 only lower in GDMs. Values of AFABP in cord blood correlated with neonatal fat mass, glycerol or leptin only in GDM.

**CONCLUSIONS** - Fetal tissues are the main source of cord serum AFABP, and in GDM fetuses AFABP values correlate with adiposity markers. A down-regulation of adiponectin and up-regulation of RBP4 in GDM mothers
and their fetuses may be related to their insulin-resistant condition, whereas changes in AFABP do not seem to be related.

**PP12**

THE UPBEAT RCT; A COMPLEX INTERVENTION IN OBESE PREGNANT WOMEN. REPORT ON PILOT TRIAL.

King’s College London, Newcastle University, Glasgow University, UK.

Obesity in pregnancy is associated with adverse maternal and neonatal outcomes and may have long term consequences for the child. The UPBEAT trial (UK Better Eating and Activity in Pregnancy Trial) is a complex intervention RCT designed to improve pregnancy outcome in obese pregnant women. The primary maternal outcome is GDM and for the infant, macrosomia.

A pilot trial was undertaken to determine whether the intervention was associated with anticipated change in behavior. 110 women were randomised at 16-18 weeks’ gestation to normal antenatal care or the intervention arm. The intervention, delivered by health trainers over 8 weekly sessions is based on control theory with elements of social cognitive theory. **Dietary advice.** Women were recommended to increase consumption of foods with a low dietary glycaemic index, to reduce saturated fat intake and reduce consumption of sugar sweetened beverages. **Physical activity advice.** Women were encouraged to increase daily activity incrementally over the intervention period and to the end of pregnancy. Physical activity was assessed in all women at baseline and 28 weeks’ gestation by a validated questionnaire (RPAQ) and accelerometry, and diet by x3 pass 24 hr dietary recall. Women in the intervention arm reported significantly more time (20 minutes) spent in moderate and vigorous physical activity (MVPA) per day than those in the control arm (median [IQR] 36.0 [6.3-85.2] and 16.2 [0-32.3] mins for the intervention and control group respectively; \( P=0.033 \)). Accelerometer compliance was poor but there was a trend for the intervention group to record increased levels of walking (810 more steps per day than those in the control group, \( P=0.08 \)). A significant reduction in dietary glycemic load (GL) was observed at 28 weeks gestation in the intervention group (\( P<0.001 \)) When expressed as percentage energy intake, GL remained significantly lower in the intervention group (\( P=0.015 \)). Dietary saturated fatty acid intake was also reduced (\( P<0.049 \)). This study has demonstrated practical feasibility of the RCT and has demonstrated dietary and physical activity behavioural change in the intervention arm, The RCT (n=2000) is now underway.