across the different categories of body mass indices and over different categories of age.
Conclusion: In an affluent western country with a good adult health profile, birthweight has an inverse relationship with all indices of glycaemia and LBW people were predisposed to higher rates of glycemic dysregulation in adult life. These associations were independent of current body mass index, and of other factors with significant correlations with glycemic dysregulation.

P2-33 Metabolic syndrome associated with birthweight in females more than males: results from the AusDiab study

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Aim: To examine the association of birthweight with metabolic syndrome (MS) using various definitions in a representative sample of the adult Australian population.
Methods: 10,788 participants in the second wave of the AusDiab study were asked to complete a birthweight questionnaire. World Health Organization (WHO), European Group for the Study of Insulin Resistance (EGIR), National Cholesterol Educational Program Adult Treatment Panel III (NCEP, ATP III), the American Association of Clinical Endocrinologists (AACE), the International Diabetes Federation (IDF) and the American Heart Association (AHA).
Results: 4,502 (62.9%) reported their birthweights – range 0.4 to 7.0 kg, mean(SD) 3.4(0.7) kg. The WHO, NCEP, IDF and AHA definitions labelled 13.7%, 19.3%, 28.4% and 16.1% with MS, respectively. The AACE and EGIR definitions, which excluded people with diabetes, labelled 18.5% and 17.1% with MS, respectively. The odds ratio (OR) for MS among people in the lowest birthweight quintile was higher than those of higher order birthweight quintiles. When examined by gender, the relationship persisted for females but not in males even after adjustments were made for important confounding factors. When we use the traditional definition of low birthweight <2.5 kg, the proportions with MS were higher among people with LBW than for normal birthweight $\geqslant$2.5 kg. LBW individuals were at higher risk for having MS compared to those with normal birthweight.
Conclusion: This is the first study to examine the associations of birthweight with various definitions of MS in a nationally representative sample of a westernized population. It shows significant associations of birthweight with MS among contemporary Australians, whose birthweights and health profiles are amongst the best in the world.

P2-34 Insulin resistance in Hispanic large for gestational age neonates at birth

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Aims: Intrauterine exposure to maternal diabetes and large size at birth are known risk factors for the subsequent development of insulin resistance and metabolic syndrome (MSX). Although Hispanic youth have been shown to have a high prevalence of MSX, it is unknown whether metabolic abnormalities and a predisposition for glucose intolerance are present at birth.
Objective: To determine if abnormalities in insulin sensitivity (S_I) exist at or soon after birth in large for gestational age (LGA) neonates born to Hispanic women with and without gestational diabetes.
Design: Hispanic neonates were enrolled for cross-sectional studies at 24–48 h after birth. Insulin sensitivity and secretion were measured by shortened fasting intravenous glucose tolerance testing.
Patients: Forty-two term neonates were recruited: 9 LGA neonates delivered of women with gestational diabetes (LGA-IDM), 12 LGA but not IDM neonates, 11 poorly grown (at 5–10th%) and 10 appropriate for gestational age (AGA) neonates.
Main outcome measure: Insulin Sensitivity Index (S_I) within 48 h of birth.
Results: Neonates were studied at 36$\pm$11h postnatal, and all groups were euglycemic at the time of study. However, the S_I was significantly lower ($P < 0.05$, ANOVA) in LGA-IDM (3.0$\pm$0.7[SEM] mU/L·min) and LGA-nonIDM (2.2$\pm$0.4 mU/L·min) cohorts in comparison to poorly grown (5.0$\pm$0.7 mU/L·min) and AGA controls (5.4$\pm$0.8 mU/L·min). Insulin secretion did not differ between groups.
Conclusions: Reduced S_I is present soon after birth in Hispanic LGA neonates born to mothers with and without gestational diabetes, demonstrating the onset of insulin resistance before birth and evidence of altered fetal programming.

P2-35 Circulating maternal lipid concentrations and newborn size: Pune Maternal Nutrition Study

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Aims: To study the effect of maternal circulating lipids on offspring birth size.
Study design: In a community based Pune Maternal Nutrition Study (PMNS) of rural women we collected information on size, glycemia (fasting and 2 h during an OGTT) and lipids (cholesterol, HDL and triglycerides) at 28 wks gestation and correlated these with neonatal size. Ethical approval and consent were obtained.
Subjects: Mothers and neonates.
Outcome measure: Size at birth.
Results: There were 491 term, live deliveries. Mothers were 21 y old, 18 kg/m^2 at conception. Fasting plasma glucose concentration was 1.0$\pm$0.6 mol/L, 2 h plasma glucose (OGTT) was 4.4$\pm$1.1 mol/L (3 IFG, 3 IGT), total cholesterol 4.9$\pm$0.9 mmol/L, HDL 1.1$\pm$0.3 mmol/L, triglycerides 1.5$\pm$0.5 mol/L. Babies weighed 2.7$\pm$0.35 kg at birth. Fasting plasma glucose concentration predicted birthweight ($r = 0.13$, $p < 0.01$) while 2 hour plasma glucose concentration predicted neonatal skinfolds ($r = 0.10$, $p < 0.01$) independent of maternal BMI. Plasma cholesterol predicted birthweight and length ($r = 0.15$ and $r = 0.10$, $p < 0.01$ for both) and plasma triglycerides predicted weight ($r = 0.10$, $p < 0.05$) independent of maternal BMI. Plama triglycerides also predicted skinfolds ($r = 0.11$, $p < 0.01$) not indepenent of maternal BMI. On multivariate analysis, maternal 2 h plasma glucose concentration predicted neonatal skinfolds ($p < 0.05$) and abdominal circumference ($p < 0.01$), plasma cholesterol predicted weight ($p < 0.001$) and skeletal measurements ($p < 0.01$) while triglycerides predicted skinfolds ($p < 0.001$).
Conclusions: Our results suggest a strong association between maternal lipid metabolism and neonatal size in addition to the well-established role of maternal glycemia during pregnancy. Further research is necessary to understand clinical implications of these findings.

P2-36 Experimental intrauterine growth retardation (IUGR) induces global epigenetic changes in rats

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Rats rendered growth retarded by bilateral uterine artery ligation at 19 days of gestation develop diabetes characterized by insulin resistance. Although the mechanism of these changes remains unclear, permanent alterations in gene expression implicate epigenetic modifications, which allow for stable propagation of gene regulatory states and may serve as a biological memory of an aberrant intrauterine milieu.