adjusting for age, BMI, lifestyle, and other CVD risk factors. CVD risk was highest among women with GDM and subsequent T2D (HR=4.13, CI=1.92, 8.89), and attenuated among women reporting GDM without T2D (HR=1.29, CI=0.93, 1.79), compared with no diabetes. Associations were stable regardless of time since pregnancy and were similar for MI and stroke. Subgroup analyses indicated a stronger CVD risk among currently obese participants (BMI≥30) (HR=1.81, CI=1.18, 2.76) than non-obese patients (RR=1.05; 95% CI=0.67, 1.65). Additionally, among women with a family history of MI, GDM was associated with a 78% greater MI risk (CI=1.01, 3.12), and among those with a family history of stroke, with a nearly 4-fold greater stroke risk (HR=3.98, CI=1.21, 13.13). Overall, GDM was associated with CVD later in life, particularly among women with intermediate T2D or a family history of CVD. Studies are needed to confirm these findings and to identify lifestyle factors to mitigate CVD risk among these high risk women.

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1432-P

Targeted and Nontargeted Metabolomics Profiling Identifies Metabolic Signatures Unique to Maternal BMI and Glycemia

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Maternal hyperglycemia and obesity during pregnancy contribute to newborn adiposity as demonstrated by the Hyperglycemia and Adverse Pregnancy Outcome (HAPO) Study and other studies. Mechanisms underlying these associations are unclear, but these maternal phenotypes likely affect the intrauterine metabolic milieu, with metabolic signatures that affect fetal growth. To characterize the intrauterine environment and investigate associations with newborn anthropometrics, we sampled 400 mothers and newborns of Northern European ancestry from the HAPO Study to span the range of maternal BMI and glucose as well as newborn birth weight (BW) and sum of skinfold (SSF) measurements observed in HAPO. We applied biochemical analyses of conventional clinical metabolites, targeted metabolomics assays of amino acids and acylcarnitines, and non-targeted gas-chromatography/mass-spectrometry assays to analyze fasting and 1-hr serum in mothers from an oral glucose tolerance test at 28 weeks' gestation and stored cord blood samples from the newborns. After Benjamini-Hochberg adjustment, 35 metabolites demonstrated a significant positive or negative association with maternal BMI in the fasting and/or 1 hr samples. In contrast, only 8 metabolites were positively or negatively associated with maternal fasting and/or 1 hr glucose. Palmitoleate, a common mono-unsaturated fatty acid, was the only metabolite associated with both phenotypes. Maternal BMI was associated with ketones, triglycerides, and carnitine esters of ketones and medium- and long-chain fatty acids, while maternal glucose was associated with the gluconeogenic precursors lactate and alanine and laurate, a medium-chain fatty acid. Of the maternal metabolites, only the carnitine ester of ketones was associated with newborn SSF and BW. In summary, maternal BMI and glucose are associated with unique metabolic signatures with one metabolite also associated with newborn adiposity.

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1433-P

Successful Replacement of Weekly Face-to-Face Visits by Unsupervised Smart Home Telecare in Diet-Treated Gestational Diabetes (GD)

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We have developed a computer-based smart telemedicine system to give automated support to GD patients while insulin is not required. The system combines a platform for remote monitoring of diabetes-related parameters with a decision-support system based on expert knowledge that generates automatic feedback to patients. Blood glucose (BG) data downloaded to the system from the patient's glucose meter is automatically classified into mealtime intervals and timing of measurement (preprandial, postprandial) by a classifier based on a decision tree.

After downloading BG data and informing on ketonuria fasting status, the patient immediately receives an evaluation of the data including completeness and, if needed, a proposal of diet adjustment. In case insulin therapy is advised, the system also contacts the responsible doctor who schedules a face-to-face appointment.

Sixty-nine patients diagnosed of GD following the NDDG criteria were randomized (2:1) to use the system (active group) and to download BG data every three days or to attend the usual weekly visits (control group).

At baseline, groups were comparable regarding all the clinical variables tested. During the follow-up period (36 days (1-141)), no correction of the automated-proposed treatment was done by doctors. Mean number of BG downloads by patient was 10.2±8 (1-29) and the mean number of changes in diet automatically proposed was 0.46. Mean number of BG values/day, mean BG and the % of BG values above 140 mg/dl, pre-partum HbA1c, and all the perinatal outcomes tested were similar between the groups. Mean number of face-to-face visits performed including first visit and training was 4.8±2.8 for the control group and 1.4±0.6 for the active group (p<0.001).

In conclusion, this computer-based smart telemedicine system successfully replaced face-to-face follow-up visits in women diagnosed of GD while insulin therapy was not required.

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1434-P

Excess Gestational Weight Gain Associated with Greater Accrual of Fat, but Not Lean, Mass

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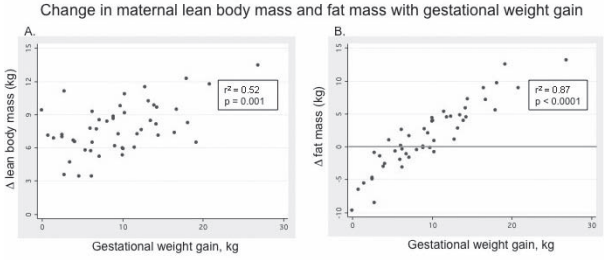
Gestational weight gain (GWG) alters maternal body composition, but the impact of excess GWG specific to fat and lean body mass accrual is unclear. We conducted a secondary analysis of 49 overweight/obese women to measure maternal body composition changes with GWG. In early (13-16 weeks) and late (34-36 weeks) pregnancy, maternal height and weight, and body composition (using BOD POD) were assessed. We measured correlations between GWG and change in maternal lean body mass (ΔLBM) and fat mass (ΔFM), and compared ΔLBM and ΔFM by adherence to 2009 IOM GWG guidelines. We then used linear regression to explore associations between ΔFM and: maternal lipids, insulin sensitivity (ISogtt), scored activity and nutrition questionnaires. Mean BMI was 32.4±6.1 kg/m^2; women gained 9.3±5.8 kg. Overweight, vs. obese, women were equally likely to have excess GWG (48% vs. 35%, p=0.6). ΔLBM was correlated with GWG (r^2=0.52, p=0.001). ΔLBM was similar whether excess or adequate GWG. ΔFM was correlated with GWG (r^2=0.87, p<0.001). Women with excess, vs. adequate, GWG had greater ΔFM (8.4±1.7 vs. 6.0±3.4 kg, p<0.001). ΔFM was not associated with change in fasting lipid profile, ISogtt, physical activity, or dietary quantity or composition. Excess GWG is associated primarily with maternal FM but not LBM accrual. Future research must evaluate maternal factors, other than those assessed here, to explain our findings and explore implications.



A. Δ lean body mass (ΔLBM) vs. gestational weight gain (GWG). Overall (n=49), r^2 = 0.52, p = 0.001; overweight (n=23), r^2 = 0.63, p = 0.01; obese (n=26), r^2 = 0.47, p = 0.02
B. ΔFM vs. GWG. Overall (n=49), r^2 = 0.87, p < 0.0001; overweight (n=23), r^2 = 0.72, p = 0.0001; obese (n=26), r^2 = 0.93, p < 0.0001

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1435-P

New Screening Criteria for Glucokinase Monogenic Diabetes in Pregnancy: Performance in a Multiethnic Cohort

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Despite the importance of identifying glucokinase monogenic diabetes (GCK-MODY) in pregnancy, universal genetic testing is not yet practicable. Standard pre-genetic screening criteria (SSC) are well established. New pregnancy-specific screening criteria (NSC) were recently proposed to identify gestational diabetes (GDM) cases that should be tested for GCK-MODY. The NSC (fasting glucose ≥5.5mmol/L and pre-pregnancy BMI <25kg/m^2) were derived from a predominantly Anglo-Celtic population. Its applicability to other ethnicities has not been examined.

To test this, we used an enrichment strategy to identify cases of GCK-MODY, previously diagnosed as GDM. A multiethnic GDM database with post-partum data from 776 women was used to identify 63 women whose post-partum OGTT was highly suggestive of GCK-MODY by SSC. 31/63 agreed

For author disclosure information, see page A810.

Guided Audio Tour poster ADA-Funded Research