women were more likely than obese or overweight women to gain under IOM guidelines (55% v 19% v 28%) (all p<.001). Exceeding IOM guidelines was associated with macrosomia in obese women (aOR 2.51 95%CI 1.01, 6.26). In overweight women, adjusted odds of macrosomia (aOR 2.82 95%CI 2.82, 8.75) were of similar magnitude to those for obese women, but findings were not significant. Individual OGTT values were not associated macrosomia.

CONCLUSION: Exceeding IOM weight gain guidelines is associated with infant macrosomia among obese GDM women, independent of OGTT results. Gestational weight gain is a modifiable risk factor that influences macrosomia risk. Interventions that optimize gestational weight gain may improve pregnancy outcomes among obese GDM women and could have significant public health impact.

Odds of macrosomia by IOM recommendations and BMI category

		Gained less than IOM guidelines (n=142)		Gained more than IOM guidelines (n=202)	
	macrosomia n /sample n	OR (95% CI)	aOR (95% CI)	OR (95% CI)	aOR (95% CI)
Normal	10/110	.24 (.03, 1.87)	.34 (.04, 2.76)	1.50 (.27, 8.41)	1.71 (.29, 9.97)
Overweight	27/167	1.35 (.38,4.74)	1.24 (.34, 4.55)	2.77 (.94, 8.17)	2.82 (.91, 8.75)
Obese	52/189	.60 (.18, 2.06)	.70 (.20, 2.44)	2.07 (.86, 5.01)	2.51 (1.01, 6.26)

Reference group, IOM weight gain guidelines met (n=104); normal (BMI 18.5-24.9), overweight (BMI 25.0-29.9), obese (>30.0).

255 Can a threshold third trimester hemoglobin A1C be used to predict maternal and neonatal pathology?

Erika Hersh[1], Edward Newton[1], Charles Hodson[1]
[1]Brody School of Medicine, East Carolina University, Obstetrics and Gynecology, Greenville, NC

OBJECTIVE: To determine a threshold, third trimester hemoglobin A1C (HbA1C) that predicts adverse maternal and neonatal outcomes.

STUDY DESIGN: This was a retrospective cohort study of 157 women who delivered 169 singleton infants at Vidant Medical Center between 2007 and 2012 who had either gestational (48%) or pre-existing diabetes (52%). The primary outcome was whether or not the infant was discharged home with mother. Secondary outcomes included macrosomia/ large for gestational age infants, intrauterine fetal demise, neonatal intensive care admission, intravenous treatment of hypoglycemia (<40 mg%), hyperbilirubinemia (>12mg%), and shoulder dystocia. Maternal primary outcomes included preeclampsia and unintended cesarean section. A ROC analysis was performed to determine the threshold HbA1C that would predict a composite adverse neonatal outcome including any one of the latter outcomes.

RESULTS: Our population was typically obese (Table), African-American or hispanic (68%), and indigent. 74% of the term patients went home with their neonates and 22% of term neonates were admitted to the NICU. Our ROC analysis identified a threshold of HbA1C of 5.3 %. There were no significant differences in age, parity, or DM class among the low and high HbA1C classes. The Table depicts the differences in outcomes above and below a third trimester HbA1C of 5.3%. We found a significant difference in the HbA1C between those that had any secondary outcome present compared to those where all adverse outcomes were absent.

CONCLUSION: A HbA1C >5.3 % appears to predict poor pregnancy outcomes for mother and neonate and might be used as a management goal.

Outcomes by high and low HbA1C

Parameter	HbA1C < 5.3	HbA1C >5.3
BMI (STD)	35.1(4.4)	39.7(8.8)
Initial HbA1C (STD)	6.27(1.4)	7.43(1.8)
Max.Units Insulin	94	107
Third Trimester HbA1C (STD	5.07(0.2)	6.35(0.85)
C/S*	20%	38%
Preeclampsia	0	12%
IUFD	0	3.4%

*All patients with intended vaginal birth.

256 Sleep apnea in early pregnancy: an independent risk factor for the development of gestational diabetes

Francesca Facco[1], David Ouyang[4], Courtney Lim[2], Anna Strohl[2], Anna Gonzalez[4], Angelica Espinoza[3], Vanessa Verzillo[4], Phyllis Zee[3], William Grobman[2]
[1]University of Pittsburgh, Obstetrics and Gynecology, Pittsburgh, PA, [2]Northwestern University, Obstetrics and Gynecology, Chicago, IL, [3]Northwestern University, Neurology, Chicago, IL, [4]Northshore University HealthSystem, Obstetrics and Gynecology, Chicago, IL

OBJECTIVE: Objective assessments of the association between sleep apnea (SA) and glucose metabolism in pregnancy are limited. The objective of this study was to evaluate the relationship between objectively assessed SA in early pregnancy and the subsequent development of gestational diabetes mellitus (GDM) in a cohort of high risk pregnant women.

STUDY DESIGN: This was a planned subgroup analysis of data from a SA and preeclampsia study. Women with chronic hypertension, obesity, twin gestation and/or a history of preeclampsia (i.e., those at high risk of preeclampsia) who were between 6 and 20 weeks were recruited to participate in an overnight SA evaluation with a validated portable monitor. Women with pregestational diabetes were excluded. SA was defined as an apnea-hypopnea index (AHI) of ≥ 5. The diagnosis of GDM was abstracted from the medical record and confirmed by a review of oral glucose tolerance testing (OGTT) by study personnel blinded to the sleep study results. The relationship between SA and GDM was explored using univariable and multivariable analysis.

RESULTS: AHI and OGTT results were available for 75 of the 80 women recruited. The mean gestational age at the sleep study was 17.1 ± 4.2 weeks. Twenty-six (35%) women had SA and 20 (25%) developed GDM. Women with SA differed from those without SA according to various demographic characteristics (Table). Women with SA were more likely to develop GDM (46.2% vs. 14.3% p=.003). After controlling for possible confounding factors including BMI, maternal age, and a history of chronic hypertension, SA remained independently and positively associated with the development of GDM (OR 3.7, 95% CI=1.1, 13.3).

CONCLUSION: Among high-risk women, SA during the first half of pregnancy is an independent risk factor for the development of GDM. Further research is needed to determine whether screening for and treatment of SA during pregnancy can lessen the frequency of GDM.

Demographic and clinical characteristics

	Women with SA N = 26	Women without SA N = 49	P value
Maternal age	35.8 ± 4.0	33.9 ± 6.8	0.2
White Black Hispanic Other	42% 35% 19% 4%	33% 37% 18% 12%	0.8
Pre-pregnancy BMI	39.3 ± 7.5	32.4 ± 9.6	0.002
Multiparous	73%	82%	0.4
Chronic hypertension	61%	24%	0.002
Prior preeclampsia	31%	27%	0.7
Twins	4%	10%	0.7

257 Comparison of insulin requirements in women with type 1 diabetes managed with continuous subcutaneous insulin infusion versus multiple daily insulin injections

Gladys Ramos[1], Hilary Roeder[1], Thomas Moore[1]
[1]University of California, San Diego Health System, Reproductive Medicine, San Diego, CA

OBJECTIVE: Type 1 diabetes mellitus (T1DM) may be managed with continuous subcutaneous insulin infusion (CSII) or multiple daily injections (MDI), however comparisons of insulin profiles between these two modalities have not been well described. Our objective was to characterize and compare the changes in insulin basal and bolus dosing across gestation in patients managed with CSII and MDI.