clinical outcomes. First, we determine the association between Path lesions and APO including: preterm birth [PTB (delivery < 37 weeks)], preeclampsia (PE), gestational hypertension (GH) and small for gestational age (SGA) infants (birthweight <10th percentile). We then compare the mean levels of serum analytes (PAPP-A, PP13, ADAM12s, PLGF), and uterine artery Doppler PI (UADPI) obtained at 11-14 weeks gestation in cases with APO and abnormal placental histology (PlacHist) to a control group without APO or abnormal Path. Path were classified as: lesions of maternal under perfusion (LMUP) including a composite of: infarct, decidual vasculopathy, distal villous hypoplasia); lesions of reduced placental reserve (LRPR)including: avascular villi, perivillous fibrin/intervillous thrombo-hematoma, villitis); and Infectious/inflammatory (INFL) lesions (chorioamnionitis, funisitis/chorionic vasculitis). Statistical analysis was performed using chi-squared, paired t-test and ANOVA.

RESULTS: Among 193 Path reviewed, LMUP were seen in 59 (30.7%); LRPR in 63 (32.85),and INFL in 65 (34.2%). PE was significantly associated with LMUP (p=0.005) and INFL (p=0.003). PTB < 28 weeks was the only sub-group of PTB with a significant association with INFL: 75% versus 31% (p<=0.002). SGA and GH were not significantly associated with any PlacHist abnormality. Significant differences were seen in mean levels of PAPPA, ADAM12s and PLGF in cases of PE and PTB with specific Path lesions compared with controls (Table).UADPI was not significantly different between the cases with APO and abnormal Path.

CONCLUSION: Our findings provide evidence linking placental pathology with mal-secretion of analytes in first-trimester in pregnancies with APO, especially PE.

Placental lesions seen in cases with preeclampsia and preterm birth

APO + placental pathology (n)	PAPPA (MoM)	ADAM12s (pg/ml)	PP13 (pg/ml)	PLGF (pg/ml)
PE + LMUP (18)	0.83±0.4*	529±282	60 ± 32.3	15±8*
Control (115)	1.2 ±0.8	514±257	59 ± 51	22±15
PE+ LRPR(16)	0.87±0.5*	365± 180*	54±37	21±11
Control (109)	1.2±0.8	501±236	58±24	23±17
PE+INFL (4)	0.74±0.1*	473±240	88±30	20±5
Control (96)	1.2 ±0.7	502±234	59±26	19±16
PTB+ LMUP (17)	1.0±0.8	415±217	44±22	16±9*
Control (102)	1.2±0.7	510±260	59±29	22±15
PTB+LRPR (14)	1.2±0.8	381±170*	45±36	19±13
Control (95)	1.2±0.7	523±243	60±24	23±17
PTB+ INFL (15)	1.1±1.0	380±199	50±20	24±15
Control (94)	1.1±0.7	503±244	59±26	20±16

*Significant at P < .05.

93   The impact of gestational weight gain on perinatal outcomes in obese women

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OBJECTIVE: To evaluate the relationship between gestational weight gain and maternal and neonatal outcomes in obese women.

STUDY DESIGN: Retrospective cohort study of obese women, defined as having a body mass index (BMI) of >30, delivering singletons >20 weeks between 2000-2009. All included women had a weight documented in the first trimester and within 3 weeks prior to delivery. Women were stratified into quartiles according to the average gestational weight gain in kg/week. Maternal and neonatal outcomes were compared using the chi-squared test and the Mantel-Haenszel test for trend.

RESULTS: 6251 obese women were eligible for the study. As shown in the Table, increased gestational weight gain (>0.53 kg/week; highest quartile of gestational weight gain) was associated with a multitude of adverse maternal and neonatal outcomes, including cesarean delivery, infections, shoulder dystocia, hypertensive disorders, and macrosomia. Minimal weight gain (<0.16 kg/week; lowest quartile of gestational weight gain) was associated with lower birthweights. Several outcomes, such as spontaneous preterm delivery, 5-minute Apgar

<5, and fetal demise, displayed a bimodal distribution, with increased rates associated with minimal and increased gestational weight gain.

CONCLUSION: Both minimal and excessive gestational weight gain in obese gravidas is associated with adverse maternal and neonatal outcomes. Obese women with moderate weight gain have the most favorable perinatal outcomes.

Perinatal outcomes (%) in obese women according to gestational weight gain

| | Weight gain (kg/week) | | | | | |
	<0.16 (N=1567)	0.163-0.35 (N=1560)	0.35-0.53 (N=1559)	>0.53 (N=1565)	p	p-trend
Spontaneous PTB	7.9	5.2	4.3	4.7	<0.0001	<0.0001
Indicated PTB	7.7	6.6	5.4	8.6	0.0035	0.305
C-section	25.4	26.9	27.9	34.2	<0.0001	0.0008
Gestational DM	5.9	6.6	6.7	5.6	0.550	0.626
Amnionitis	4.7	5.1	5.9	8.4	<0.0001	0.010
Endometritis	1.1	1.6	1.7	2.5	0.034	0.027
HTN	12.7	14.4	15.8	21.3	<0.0001	<0.0001
Preeclampsia	6.5	6.5	6.5	11.9	<0.0001	0.014
Apgar 5 min ≤ 3	2.8	1.5	1.3	1.9	0.015	0.003
Fetal demise	1.4	0.9	0.6	1.0	0.129	0.048
NICU	11.3	8.5	8.5	12.0	0.0006	0.073
BWT ≥ 4000g	4.3	6.3	8.9	12.4	<0.0001	<0.0001
LGA	10.3	14.1	17.2	21.5	<0.0001	<0.0001
SGA	6.6	5.5	4.4	4.3	0.012	0.004

BWT, birthweight; *DM*, diabetes mellitus; *HTN*, hypertension; *LGA*, large for gestational age; *PTB*, preterm birth; *SGA*, small for gestational age.

94   What is the optimal time to deliver dichorionic diamniotic twins when one twin has intrauterine growth restriction?

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OBJECTIVE: Determining the optimal timing of delivery of a twin gestation involves balancing the risk of complications against the potential morbidity of late preterm/early term birth. Timing of delivery becomes more challenging if one twin has intrauterine growth restriction (IUGR), as this increases the risk of IUFD. We used decision analysis to estimate the optimal gestational age (GA) for delivery of dichorionic diamniotic (DCDA) twin gestations when one has IUGR.

STUDY DESIGN: A decision-analytic model was created using TreeAge to compare the outcomes of delivery at 34, 35, 36, 37 and 38 weeks in a theoretical cohort of DCDA twin pregnancies when one twin has IUGR. Our baseline assumption was that a twin with IUGR was at 7.06-fold increased risk of IUFD. Strategies involving expectant management (EM) until a later GA accounted for the probabilities of spontaneous delivery, indicated delivery, and IUFD during each successive week. GA associated risks of neonatal complications including major neurodevelopmental disability, perinatal and neonatal mortality. Baseline assumptions were derived from the literature. Total quality-adjusted life years (QALYs) were calculated, accounting for both neonatal and maternal utilities. Sensitivity analyses were conducted to evaluate the impact of baseline assumptions on model outcomes.

RESULTS: Our model showed that earlier GAs were associated with increased neonatal morbidity, but lower overall IUFD rates (Table). Balancing these outcomes, the optimal delivery strategy was EM until 35 weeks, which maximized the total QALYs. Sensitivity analysis showed that optimal GA at delivery was sensitive to the increased risk of IUFD associated with IUGR. EM until 35 weeks was the optimal strategy until the increased risk of IUFD in an IUGR twin fell below 5.82-fold, when delivery strategies at later GAs became preferred.

CONCLUSION: Weighing the risks of IUFD against the outcomes of iatrogenic prematurity, the ideal GA to deliver DCDA twins when one has IUGR is 35 weeks.

Dichorionic diamniotic twins in the setting of IUGR

Optimal GA at Delivery Based on Risk of IUFD
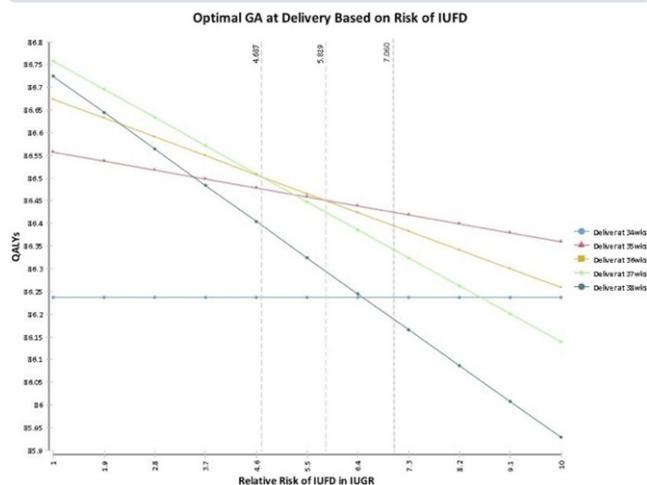
Optimal delivery strategy with varying risk of IUFD

Planned GA of Delivery	Major Neurodevelopmental Disability /100,000	Neonatal Death/100,000	IUFD/ 100,000	QALYs
34	2,071	1,053	-	86.24477
35	1,275	731	555	86.42732
36	895	593	1,116	86.39456
37	661	435	1,732	86.33801
38	660	433	2,231	86.18300

As shown above, if the relative risk of IUFD in an IUGR twin is less than 4.54-fold greater than a non-IUGR twin, the optimal time of delivery increases to 37 weeks.

95   What is the optimal GA to deliver dichorionic diamniotic twins when one twin has a major cardiac anomaly?

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OBJECTIVE: Optimal timing of twin delivery involves balancing the risk of IUFD against the potential morbidity of late preterm/early term birth, which becomes more challenging if one twin has a major cardiac anomaly, as this increases the IUFD risk and neonatal morbidity/mortality. We used decision analysis to estimate the optimal GA for delivery of dichorionic diamniotic (DCDA) twins when one has a cardiac anomaly.

STUDY DESIGN: A decision-analytic model was created using TreeAge to compare the outcomes of delivery at 34 through 38 weeks in a theoretical cohort of DCDA twin pregnancies when one twin has a major cardiac anomaly. Our baseline assumption was that a twin with a cardiac anomaly was at 10-fold increased risk of IUFD. Strategies involving expectant management (EM) until a later GA accounted for the probabilities of spontaneous delivery, indicated delivery, and IUFD during each successive week. GA associated risks of neonatal complications including major neurodevelopmental disability, perinatal and neonatal mortality. Baseline assumptions were derived from the literature. Total quality-adjusted life years (QALYs) were calculated, accounting for both neonatal and maternal utilities. Sensitivity analyses were conducted.

RESULTS: Our model showed that earlier GAs were associated with increased neonatal morbidity, but lower overall IUFD rates (Table). Balancing these outcomes, the optimal delivery strategy was EM until 38 weeks, which maximized the total QALYs. Sensitivity analysis showed that optimal GA at delivery was sensitive to the increased risk

of IUFD associated with major cardiac anomalies. EM until 38 weeks was the optimal strategy until the increased risk of IUFD in an cardiac anomaly twin increased beyond a relative risk of 21.6, when delivery strategies at earlier GAs became preferred.

CONCLUSION: Weighing the risks of IUFD against the outcomes of iatrogenic prematurity, the ideal GA to deliver DCDA twins in one with a major cardiac anomaly is 38 weeks.

Dichorionic Diamniotic Twins when one has a major cardiac anomaly			
Planned GA of Delivery	Major Neurodevelopmental Disability /100,000	Neonatal Death/100,000	IUFD/ 100,000	QALYs/1000
34	24,000	35,000		71,029
35	16,000	29,000	735	74,359
36	11,000	25,000	1,543	76,278
37	8,000	22,000	2,289	77,412
38	8,000	21,000	2,944	77,590

96   The effect of CenteringPregnancy Group prenatal care on enrollment in the post-partum family planning Medicaid waiver program

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OBJECTIVE: To evaluate the effect of participation in group prenatal care (GPNC) compared with participation in traditional prenatal care (TPNC) on enrollment in the post-partum family planning waiver program among South Carolina women enrolled in Medicaid during pregnancy.

STUDY DESIGN: South Carolina Medicaid billing data was linked to birth certificate records to create a retrospective cohort of women delivering at a single hospital between May 2009 and May 2010. Women who chose to participate in GPNC were matched with women in TPNC using propensity scores. Multivariate logistic regression was used to examine differences in rates of participation in the Medicaid family planning waiver program by 3 months post-partum.

RESULTS: 339 women participating in GPNC were compared with 602 in TPNC. With the exception of tobacco use during pregnancy, the propensity matched cohort was balanced across all descriptive covariates. The rate of enrollment in the family planning waiver was 57.8% (n=196) for GPNC, as compared with 43.7% (n=263) in TPNC (p<0.05). Multivariate analysis confirmed women in GPNC were more likely to enroll in family planning by 3 months post-partum (AOR 2.02, 95% CI 1.48-2.75).

CONCLUSION: This study found GPNC to be associated with improved enrollment in the family planning Medicaid waiver program. It expands the evidence base supporting GPNC by documenting improved transitioning into other important health service programs during the post-partum period compared to a rigorously matched cohort of women receiving TPNC. Previous studies have found participation in GPNC to be associated with improved birth outcomes. The current project evaluates ways GPNC participation could have a more lasting impact on women's health.