RESULTS: In a combined analysis of races, IPA identified both fetal (Eotaxin,ICAM-1,IGF-I,IL-1β,MIP1α,MCP-3,TGFβ1,TNFα, TNFR-I,TNFR-II,VEGF) and maternal (Eotaxin,ICAM-1,IGF-I,IL-1β,IL-2,IL-6R,ANGPT2,FAS ligand,FGF Basic,IL-5,IL-10,IL-13) biomarkers of cellular movement and cell-to-cell interaction associated with PTB. Data stratified by race demonstrated fetal biomarkers (Eotaxin,FGF Basic,ICAM-1,IGF-I,IL-1β,IL8,IL-10 MIP1-α,TGF-β1,TNFα,TNFR-I,TNFR-II,VEGF) contribute to PTB in C (p= 4.53E-03). Fetal contribution was not evident in AA PTB. Maternal biomarkers (IL-1β,IL-6R,IL8,MIP1α,TIMP-1,TNF-α,TNFR-I, ANGPT2,FGF Basic) associated with AA PTB (p = 5.95E-04), and (IL-RA,IL8, TNFR-1,VGEF) associated with C PTB (p=2.78E-02).

CONCLUSION: Maternal-fetal biomarker differences result in distinct pathophysiologic pathways leading to PTB in different races. Markers of fetal inflammation and hematologic dysfunctions in C and maternal inflammatory markers in AA contribute to PTB. PTB biomarkers and pathways are not universal and may change based on individuals own risk factors including race.

16 Betamethasone dosing interval–12 or 24 hours apart?

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OBJECTIVE: To determine whether there is a statistically significant difference in the incidence of neonatal Respiratory Distress Syndrome (RDS) when administering 2 intramuscular maternal doses of 12 mg betamethasone 12 hours versus 24 hours apart. The total dosage of 24mg was based on animal studies and shown to achieve fetal concentrations comparable to stress levels of cortisol occurring after birth. The 24-hour dosing interval was arbitrarily selected. The 12-hour dosing maybe more appealing pharmakokinetically and clinically as one-third women with preterm labor deliver within 24 hours.

STUDY DESIGN: Prospective, randomized, semi-blinded trial. Women with spontaneous or medically-indicated preterm labor, with or without rupture of membranes, between 23 to 34 weeks were allocated into 4 groups and consented (Table). Each group was randomly assigned to the 12 or 24-hour dosing. RDS was defined as need for supplemental oxygen to maintain PaO2 >50 mm Hg with chest radiograph findings of RDS or need for surfactant therapy. Maternal blood was collected 48 hours after first dose; cord blood was collected at delivery for measuring betamethasone levels.

RESULTS: The incidence of RDS was significantly lower with the 12-hour dosing interval in mothers ≤26 weeks at enrollment. There was no difference noted in any other neonatal outcome (hospital days, mortality, necrotizing enterocolitis, bronchopulmonary dysplasia, sepsis, retinopathy or intraventricular hemorrhage). There was no difference in incidence of maternal temperature >100.4 F or postpartum length of stay. Demographics are outlined in Table with no difference in groups except more black women in 24-hour Group A.

CONCLUSION: The 12-hour dosing interval is equivalent, and maybe superior, than the 24-hour interval for prevention of RDS in neonates of mothers delivering preterm. No difference was seen after 26 weeks probably due to the lower incidence of RDS and relatively smaller sample size. Black race is associated with lower incidence of RDS and is not a confounding factor. A larger multicenter prospective study is needed to confirm our findings.

DEMOGRAPHICS

DEMOGRAPHICS	12 hour			24 hour			p
Maternal Age	N	Mean	SD	N	Mean	SD	
Overall	143	27.37	6.89	92	30.00	6.68	0.00
Group A	26	29.31	6.51	26	29.65	5.44	1.00
Group B	24	29.63	7.24	13	27.62	5.64	0.99
Group C	49	26.16	6.37	32	31.34	8.06	0.02
Group D	44	26.34	7.13	21	29.86	6.26	0.51
Gravidity	143			92			
Overall		3.15	2.30		3.66	2.23	0.10
Parity (Median)		1.00	0-2		1	0-2	0.67
Race	143	n	%	92	n	%	
White		53	37.1%		34	37.0%	
Black		55	38.5%		30	32.6%	
Hispanic		30	21.0%		25	27.2%	
Asian		1	0.7%		1	1.1%	
Other		4	2.8%		2	2.2%	0.80
Group A	27			26			
White		13	48.1%		3	11.5%	
Black		8	29.6%		14	53.8%	
Hispanic		6	22.2%		9	34.6%	0.01
GA at Betamethasone (Mean/SD)							
Overall	142	29.86	3.13	90	28.71	3.56	0.01
Group A	26	24.59	0.98	26	24.28	1.10	0.97
Group B	24	27.86	0.94	13	27.00	2.62	0.26
Group C	48	30.88	0.88	30	30.51	0.98	0.80
Group D	44	32.97	0.53	21	32.67	0.81	0.96
GA at Delivery (Mean/SD)							
Overall	143	32.30	4.08	90	31.48	5.00	0.17
Group A	26	27.34	4.10	26	25.58	2.34	0.47
Group B	24	30.68	3.10	13	32.25	5.27	0.83
Group C	49	33.70	3.06	30	33.79	3.36	1.00
Group D	44	34.58	2.39	21	35.02	2.16	1.00
Delivery	142			92			
Vaginal		98	69.0%		54	58.7%	
Csection		44	31.0%		38	41.3%	0.11
PPROM	143	46	32.2%	92	30	32.6%	0.94
Fetal Sex		n	%		n	%	
Overall	142			92			
Male		76	53.5%		45	48.9%	
Female		66	46.5%		47	51.1%	0.49
Birth Weight (Mean/SD)							
Overall	142	1795.6	208.8	92	1734.4	937.8	0.61
Group A	25	983.5	828.0	26	734.7	331.9	0.90
Group B	24	1489.7	789.4	13	1847.8	999.1	0.79
Group C	49	2001.3	661.2	32	2087.3	712.3	1.00
Group D	44	2194.7	512.0	21	2364.2	744.7	0.98
AGA/SGA	110	n	%	75	n	%	
AGA		95	86.4%		66	88.4%	
SGA		15	13.6%		9	12.0%	0.76

OUTCOMES

OUTCOMES	12 hour			24 hour			p
T>100.4 - (n)	138	11	8.0%	84	5	6.0%	0.57
PPLOS (days)	138	2.7	1.1	83	3.2	1.5	0.09
NICU days	119	21	6-46	83	21	3-48	0.40
NICU - (n/%)	137	108	78.8%	91	76	83.5%	0.38
Group A	22	20	90.9%	26	25	96.2%	0.59
Group B	24	20	83.3%	13	12	92.3%	0.64
Group C	48	38	79.2%	32	23	71.9%	0.45
Group D	43	30	69.8%	20	16	80.0%	0.39
RDS - (n/%)	124	41	33.1%	82	37	45.1%	0.08
Group A	20	16	80.0%	23	23	100%	0.04
Group B	22	12	54.5%	13	6	46.2%	0.63
Group C	44	10	22.7%	29	7	24.1%	0.89
Group D	38	3	7.9%	17	1	5.9%	1.00
Mortality - (n/%)	143	14	9.8%	92	14	15.2%	0.22
Group A	26	10	38.5%	26	11	42.3%	0.78
Group B	24	3	12.5%	13	2	15.4%	1.00
Group C	49	0	0.0%	32	1	3.1%	0.40
Group D	44	1	2.3%	21	0	0.0%	1.00
Sepsis - (n/%)	124	11	8.9%	80	9	11.3%	0.58
Group A	20	8	40.0%	23	5	21.7%	0.19
Group B	22	1	4.5%	11	1	9.1%	1.00
Group C	44	2	4.5%	29	3	10.3%	0.38
Group D		0			0		
BPD - (n/%)	120	26	21.7%	76	23	30.3%	0.18
Group A	18	15	83.3%	20	15	75.0%	0.70
Group B	21	7	33.3%	11	4	36.4%	1.00
Group C	44	2	4.5%	29	4	13.8%	0.21
Group D	37	2	5.4%	16	0	0.0%	1.00
NEC - (n/%)	120	8	6.7%	77	2	2.6%	0.32
Group A	19	4	21.1%	20	1	5.0%	0.18
Group B	22	1	4.5%	11	0	0.0%	1.00
Group C	44	3	6.8%	29	1	3.4%	1.00
Group D		0			0		
ROP - (n/%)	62	21	33.9%	35	15	42.9%	0.38
Group A	15	13	86.7%	14	11	78.6%	0.65
Group B	17	7	41.2%	5	1	20.0%	0.61
Group C	22	1	4.5%	11	3	27.3%	0.10
Group D		0			0		
IVH - (n/%)	72	25	34.7%	42	12	28.6%	0.50
Group A	18	12	66.7%	18	8	44.4%	0.18
Group B	18	6	33.3%	7	2	28.6%	1.00
Group C	25	5	20.0%	14	1	7.1%	0.39
Group D	11	2	18.2%	3	1	33.3%	1.00
GA at time of betamethasone							
Group A	23.0 - 26.0 weeks						
Group B	26.1 - 29.0 weeks						
Group C	29.1 - 32.0 weeks						
Group D	32.1 - 34.0 weeks						