5 Maternal outcomes by race during postpartum readmissions

Aleha Aziz, Cynthia Gyamfi-Bannerman, Zainab Siddiq, Jason D. Wright, Dena Goffman, Jean-Ju Sheen, Mary E. D'Alton, Alexander M. Friedman

Columbia University Irving Medical Center, New York, NY

OBJECTIVE: With efforts focusing on reducing differentials in adverse maternal outcomes, we sought to determine the association of race with risk for serious complications during postpartum readmissions.

STUDY DESIGN: This retrospective cohort study utilized the Nationwide Inpatient Sample from the Healthcare Cost and Utilization Project from 2012 to 2014. Women ages 15 to 54 readmitted postpartum after a delivery hospitalization were identified by Centers for Disease Control and Prevention criteria. Race and ethnicity were characterized as white, black, Hispanic, Asian or Pacific islander, Native American, other, and unknown. Overall risk for readmission by race was determined. Risk for severe maternal morbidity (SMM) during readmissions by race was analyzed. Individual outcomes including pulmonary edema/acute heart failure and stroke were also analyzed by race. Log- linear regression models including demographics, hospital factors, and comorbid risk were used to analyze risk for SMM during postpartum readmissions.

RESULTS: Out of 2.4 million births, 41,546 women admitted postpartum from 2012 to 2014 were analyzed including 19,334 white, 9,403 black, and 6,682 Hispanic women. Compared to white women, black women were at 73% higher risk of postpartum readmission (95% confidence interval [CI] 69%-78%) while Hispanic women were at 21% lower risk of readmission (95% CI 18%-23%). In unadjusted analysis, compared to white women, black women admitted postpartum were at 27% higher risk of SMM (95% CI 24-29%) while Hispanic women were at 10% lower risk (95% CI 7- 13%). In the adjusted model, black women were at 16% higher risk for SMM during readmission than white women (95% CI 10-22%). Differences in SMM risk between other racial groups and white women were not significant. In addition to overall morbidity, black women were at significantly higher risk for eclampsia, ARDS, and renal failure than other racial groups (p<0.05 all) (Fig). Black women were at 126% higher risk for pulmonary edema/acute heart failure than white women (95% CI 117-136%).

CONCLUSION: Black women were more likely (i) to be readmitted postpartum, (ii) to suffer SMM during readmission, and (iii) to suffer life threatening complications such as pulmonary edema / acute heart failure. At-risk women including black women with cardiovascular risk factors may benefit from short-term postpartum follow up.

Figure. Risk for severe morbidity diagnoses during postpartum readmissions by race
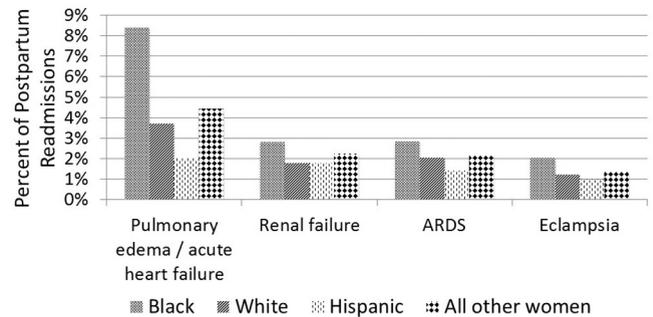
Severe Maternal Morbidity (SMM) Diagnoses – indicator identified by the Center for Disease Control and Prevention (CDC) using ICD codes

6 Early gestational diabetes screening in obese women: a randomized controlled trial

Lorie M. Harper[1,2], Victoria C. Jauk[1,2], Sherri Longo[3], Joseph R. Biggio[3,2], Jeff M. Szychowski[1,2], Alan T. Tita[1,2]

[1]Center for Women's Reproductive Health, University of Alabama at Birmingham, Birmingham, AL, [2]Department of Obstetrics and Gynecology, University of Alabama at Birmingham, Birmingham, AL, [3]Ochsner Health System, New Orleans, LA

OBJECTIVE: Although ACOG recommends screening obese women early for gestational diabetes (GDM), no studies demonstrate an improvement in perinatal outcomes. We sought to determine whether early GDM screening improves pregnancy outcomes in obese women.

STUDY DESIGN: RCT of obese women (BMI$\geq$30 kg/m^2) with non-anomalous, singleton gestations <20wks comparing early GDM screening (14-20 wks) to routine (24-28 wks). GDM screening was performed using a 50-g, 1-hr glucose challenge test followed by a 100-g, 3-hr glucose tolerance test if $\geq$135 mg/dL. GDM was diagnosed using Carpenter Coustan criteria. HbA1c was measured on all patients; the provider was notified and GDM diagnosed if $\geq$6.5. Women not diagnosed at 14-20 wks were rescreened at 24-28 wks. Exclusion criteria were diabetes, major medical illness (cardiac, hemoglobinopathy, prednisone), bariatric surgery, and prior cesarean. The primary outcome was a composite of macrosomia (>4000g), primary cesarean, hypertensive disease of pregnancy (PIH), shoulder dystocia, neonatal hyperbilirubinemia, and neonatal hypoglycemia. We estimated a 50% incidence of the primary composite outcome; to detect a 50% reduction in the GDM patients (α=0.05, β=0.2), 58 GDM patients per group were necessary. The total sample size of 950 estimated a 14% incidence of GDM in obese women. This sample would also have 80% power to detect a 10% absolute change in the primary outcome for the entire population.

RESULTS: Of 954 women enrolled, 912 (95.6%) had outcomes. Randomization groups were balanced at baseline for race, BMI, nulliparity, gestational age at randomization, and HbA1c. Of the 454 (49.7%) randomized to early screening, 69 (15.2%) were diagnosed with GDM: 29 (6.4%) <20 wks and 40 (8.8%) >24 wks. Of 458 randomized to routine screening, 56 (12.2%) had GDM. Early screening did not reduce the incidence of the primary outcome as it was nominally higher in the early group (59.0% vs 53.3%, p=0.08, Table 1). PIH was not reduced in the early group (13.5% vs 9.6%,

p=0.06). Use of insulin was significantly increased in the early group (2.6% vs 0.7%, p=0.02). These findings were consistent when only those with GDM were compared (Table 2); considering only GDM, women in the early group were delivered earlier than the routine.

CONCLUSION: In this RCT, early GDM screening in obese women was not beneficial and may have been harmful. Recommendations for early GDM screening need to be reassessed in light of these findings.

Table 1 Outcomes in Early GDM Screening, Entire Cohort

	Early (n=454)	Routine (n=458)	P	Relative Risk (95% CI)
Primary Composite Outcome	268 (59.0%)	244 (53.3%)	0.08	1.13 (0.98-1.29)
Macrosomia	25 (5.6%)	21 (4.6%)	0.51	1.10 (0.84-1.45)
Shoulder Dystocia	30 (6.6%)	32 (7.0%)	0.83	0.97 (0.74-1.27)
Primary Cesarean	79 (17.4%)	92 (20.1%)	0.30	0.91 (0.77-1.09)
Gestational Hypertension	74 (16.4%)	57 (12.5%)	0.09	1.16 (0.98-1.37)
Preeclampsia	61 (13.5%)	44 (9.6%)	0.07	1.19 (1.0-1.42)
Neonatal Hyperbilirubinemia	129 (29.3%)	108 (23.5%)	0.09	1.14 (0.99-1.31)
Neonatal Hypoglycemia	21 (4.6%)	20 (4.4%)	0.85	1.0 (0.76-1.40)
GDM	69 (15.2%)	56 (12.2%)	0.19	1.13 (0.95-1.34)
Gestational Age at Delivery	38.1 (3.7)	38.5 (3.4)	0.13	-
Any Diabetic Medication	32 (7.1%)	21 (4.6%)	0.11	1.23 (0.98-1.54)
Insulin	12 (2.6%)	3 (0.7%)	0.02	1.62 (1.25-2.11)
Induction of labor	212 (46.7%)	229 (50%)	0.32	0.94 (0.82-1.07)

Table 2 Outcomes in GDM only with Early versus Routine Screening

	Early N=69	Routine N=56	p
Primary Composite Outcome	51 (73.9%)	40 (71.4%)	0.76
Macrosomia	4 (5.9%)	5 (8.9%)	0.73
Shoulder Dystocia	4 (5.8%)	5 (8.9%)	0.50
Primary Cesarean	16 (23.2%)	13 (23.2%)	0.99
Gestational Hypertension	14 (20.3%)	8 (14.3%)	0.38
Preeclampsia	15 (21.7%)	9 (16.1%)	0.42
Hyperbilirubinemia	26 (40%)	17 (30.4%)	0.27
Neonatal Hypoglycemia	7 (10.1%)	9 (16.1%)	0.32
Gestational Age at Delivery	36.7 (4.5)	38.1 (1.7)	<0.01
Any Diabetic Medication	31 (45.0%)	19 (33.9%)	0.21
Insulin	12 (17.4%)	3 (5.4%)	0.04
Induction of labor	37 (53.6%)	36 (64.3%)	0.23

7 Text message remote blood pressure monitoring eliminated racial disparities in postpartum hypertension care

Adi Hirshberg, Diego J. Aviles, Sindhu Srinivas
Maternal and Child Health Research Center, Perelman SOM, University of Pennsylvania, Philadelphia, PA

OBJECTIVE: Significant racial disparities are observed in outcomes of women with pregnancy related hypertension (HTN). We evaluated whether text-based remote blood pressure (BP) monitoring could improve this disparity.

STUDY DESIGN: This was a planned secondary analysis of a randomized clinical trial that compared the effectiveness of text-based BP monitoring to usual care in-person BP visits for women with pregnancy related HTN in the early postpartum (PP) period. Women were randomized to either two weeks of text-based monitoring using an automated platform and home BP cuff (text) or usual care BP check at their prenatal office 4—6 days following discharge (usual care). Ascertainment of BP, defined as either office visit attendance or at least one BP texted, was compared among black and non-black women. Need for an oral antihypertensive and HTN readmission was compared between groups. Chi square was used to compare categorical variables. Poisson regression with a robust variance assumption was used to test for an interaction between BP ascertainment and race by trial arm to evaluate the impact of text on the disparity between black and non-black BP ascertainment.

RESULTS: 206 women participated in the trial (103 per arm). Seventy-three (71%) women in usual care and 68 (66%) in text were black. Non-black women were significantly more likely than black women to present for a BP visit in usual care (70% vs 33%, p<0.001). Text-based monitoring significantly improved BP ascertainment for both black and non- black women compared to usual care (93% vs 33%, p<0.001 and 91% vs 70%, p =0.03 respectively). Remote monitoring was able to eliminate the racial disparity observed in BP ascertainment (p=0.002), with over 90% BP ascertainment in both race groups (p=0.85)(Figure). There were no HTN readmissions in the text arm, whereas 4 readmissions were observed in usual care (3 of the 4 in black women). There was no difference in the percent of black women started on BP medication amongst those who texted or attended their office visit (19% vs 21%, p=0.73).

CONCLUSION: Text-based monitoring eliminated the observed racial disparity in PP HTN care. Text as the standard would have likely led to medication initiation in an additional 20% or more women who missed an office visit. Given most strokes and maternal morbidity from pregnancy related HTN occur within 10 days of delivery, text message remote monitoring is an innovative way to equally engage all women in the PP period and reduce PP morbidity and mortality.

Postpartum blood pressure ascertainment by race and follow up method
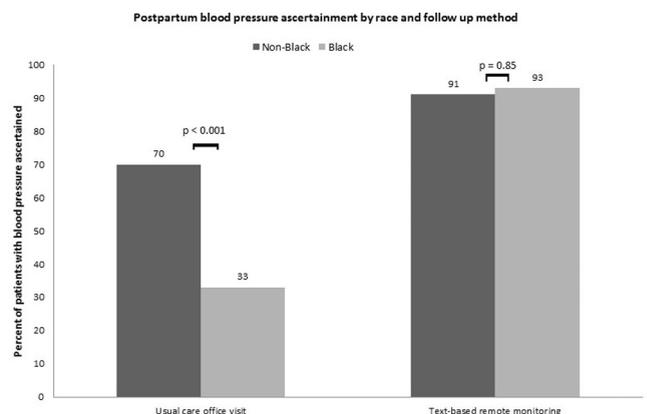
8 Primary cytomegalovirus infection during pregnancy and subsequent congenital infection: maternal antibody screening involving 19,000 women

Kuniaki Toriyabe[1], Kyoko Shimada[1], Asa Kitamura[1], Toshio Minematsu[2], Makoto Ikejiri[3], Shigeru Suga[4], Fumi Furuhashi[1], Shoichi Magawa[1], Shintaro Maki[1], Michiko Kaneda[1], Masafumi Nii[1], Kayo Tanaka[1], Hiroaki Tanaka[1], Yuki Kamimoto[1], Tomoaki Ikeda[1]