

Equitable time to treatment of severe hypertension among races at Cleveland Clinic Akron General

Sarah E. Davis, DO¹, Estee George, PhD¹, David E. Biats, DO¹, Rachelle Abdelnour, MD¹, Caroline Mangira, BSN, MPH¹, Natalie Bowersox, MD¹

1. Cleveland Clinic Akron General, Akron, OH, USA

Abstract

PURPOSE: Through this quality assurance initiative, we sought to ensure that Cleveland Clinic Akron General (CCAG) is 1) adhering to the American College of Obstetricians and Gynecologists (ACOG's) recommendation to treat severe range hypertension within 30 to 60 minutes of recognition and 2) providing equitable time to treatment for women of all races and ethnicities.

METHODS: Data was collected by performing a retrospective chart review. CCAG patients who were diagnosed with severe hypertension in pregnancy and up to six weeks postpartum from July 1, 2020 through July 31, 2021 were included in the data collection. Demographic, clinical, and baseline data were collected and described. This included patients age, body mass index, race (Black, White, Asian, or other), Ethnicity (Hispanic, or Not Hispanic), primary insurance (private/commercial, self-pay, or Medicaid), status (pregnant, or postpartum), gestational age if pregnant, days postpartum if postpartum, patient location (triage, labor and delivery, postpartum, antepartum, or Emergency Department), diagnosis (chronic hypertension, gestational hypertension, HELLP syndrome, pre-eclampsia, or superimposed pre-eclampsia), medication (labetalol IV, hydralazine IV, Nifedipine IR po, or other), and time to treatment (min). Categorical variables were presented as frequencies with percentages, and continuous variables were presented as means with standard deviations or medians with interquartile ranges depending on normality distribution. Wilcoxon rank sum tests or Kruskal-Wallis tests were used as appropriate to assess the effect of each predictor on time to treatment of hypertension. Analyses were performed to test for associations between race and time to treatment using SAS® Software (version 9.4; Cary, NC). A significant level of 0.05 was used.

RESULTS: A total of 131 patients were included: 85 (65%) were White and 46 (35%) were another race. The vast majority of patients were Not Hispanic (99%) vs Hispanic (1%). The mean age of patients was 30 years old. Private insurance comprised of 44%, Medicaid 54%, and Self-pay 1% of patients. When treated for severe range hypertension, 99 (75%) of patients were pregnant, and 32 (25%) were in the postpartum state. The gestational age of pregnant patients who were treated was 37 weeks. If patients were postpartum they were six days postpartum. The patients were either located in triage (n=69, 53%), labor and delivery (n= 57, 43%), postpartum (n=4, 3%), antepartum (n=0, 0%), or the Emergency Department (n=1, 1%) if acutely treated. Patients had the following diagnoses when treated for severe range blood pressure: pre-eclampsia (n=92, 70%), superimposed pre-eclampsia (n=30, 23%), chronic hypertension (n=7, 5%), gestational hypertension (n=2, 1%), or HELLP Syndrome (n=0, 0%). The medications that were used was labetalol intravenous (n=53, 41%), hydralazine

intravenous (n=0, 0%), Nifedipine IR oral (n=64, 49%), or other (n=14, 11%).

The only statistically significant variable before controlling for the other variables was medications ($p=0.02969$). After controlling for diagnosis, medication, and patient location, race was not significantly associated with time to treatment of severe hypertension (beta coefficient 0.94, 95%, confidence interval 0.69-1.27, $p=0.6667$). The median time to treatment of severe hypertension was 14 (IQR 9.1-21.0) minutes. Two different generalized linear model estimates were developed to estimate the effect of race on time to treatment after controlling for diagnosis, medication, and patient location. Model 1 included all 131 patients. Model 2 included 129 patients; two extreme outlying data points greatly influenced parameter estimates and were removed. In Model 1, diagnosis, medication, and patient location were statistically significant, whereas in Model 2, none of the variables were statistically significant.

CONCLUSION/IMPLICATIONS: This initiative confirmed that race is not associated with time to treatment of severe hypertension at CCAG. It also confirmed that CCAG is adhering to ACOG's guideline to treat severe hypertension within 30-60 minutes of recognition. However, we discovered that blood pressures are often not collected at the correct time interval, and severe blood pressures are frequently not reported to providers. This means that acute treatment opportunities are unknowingly missed and could be contributing to the increase in maternal mortality among certain racial and ethnic groups. Urgent attention to these matters is needed to prevent maternal mortality.