

Table 1. Rates of Hypertensive Disease of Pregnancy

	COVID- (N=1548)	COVID+ (N=167)	P value
Gestational hypertension	56 (3.6)	15 (9.0)	<0.001
Pre-eclampsia without severe features	20 (1.3)	6 (3.6)	0.03
Pre-eclampsia with severe features	55 (3.6)	9 (5.4)	0.12

Data expressed as N (%)

Table 2. Severity of Hypertensive Disease of Pregnancy

	COVID- (N=131)	COVID+ (N=30)	P value
Requirement for rapid acting anti-hypertensive medications	33 (25.19)	4 (13.33)	0.16
Total number of doses of rapid acting anti-hypertensive medications	0.47 ± 1.01	0.20 ± 0.55	0.16
Pre-eclamptic lab abnormalities	14 (10.69)	5 (16.67)	0.36
Platelets < 100 (x10 ³ /uL)	3 (2.29)	1 (3.33)	0.57
AST or ALT > x2 normal (U/L)	9 (6.87)	5 (16.67)	0.14
Creatinine > 1.1 (mg/dL)	4 (3.05)	0	1.00
Pre-eclamptic symptoms			0.25
Headache	9 (6.87)	0	
Vision changes	0	1 (3.33)	
Chest pain	1 (0.76)	0	
Right upper quadrant pain	1 (0.76)	0	
Pulmonary edema	1 (0.76)	0	
Magnesium intrapartum	34 (25.95)	6 (20.00)	0.50
Magnesium postpartum	55 (41.98)	9 (30.00)	0.23
Requirement for anti-hypertensive medications postpartum	48 (36.64)	6 (20.00)	0.08
Number of anti-hypertensive medications postpartum	0.41 ± 0.61	0.20 ± 0.41	0.08
One anti-hypertensive	41 (31.30)	6 (20.00)	
Two anti-hypertensives	5 (3.82)	0	
Three anti-hypertensives	1 (0.76)	0	
Readmission for pre-eclampsia	9 (6.87)	1 (3.33)	0.69

AST = aspartate transaminase, ALT = alanine transaminase
Data expressed as mean +/- SD or N (%)

33 Improving Treatment for Hypertensive Emergencies among Pregnant and Postpartum Women Using a Hypertensive Pathway Intervention



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OBJECTIVE: To assess the effect of an anti-hypertensive pathway order set in improving treatment of hypertensive emergency in pregnant and postpartum women

STUDY DESIGN: A multi-disciplinary task force created a hypertensive pathway order set and provided staff training. Pregnant and postpartum women documented to have 2 or more consecutive severe range blood pressures (srBP) in the year prior (2017) and the year after (2019) implementation of the pathway were included. Use of short-acting antihypertensive (aHTN) (intravenous labetalol, intravenous hydralazine, or oral nifedipine) were considered appropriate treatment. Outcomes measured were whether aHTN was given at all, whether it was given for all instances of srBP, and time to aHTN administration. Rates of aHTN provision were compared before and after implementation of the standard order set.

RESULTS: A total of 566 women with srBP were included, with 304 women in 2017 and 262 in 2019. There were no differences in age, parity, gestational age, race, or ethnicity between cohorts. There were more preeclampsia diagnoses in 2019 than 2017 (79% vs. 59%, p<0.01) (Table 1). The rates of aHTN administration improved significantly with use of the pathway—67% in the pre-intervention cohort received an aHTN at least once vs. 80% post-intervention (p<0.01) (Table 2). Significant improvement was also evident for

receipt of aHTN for all instances of srBP (29% pre-intervention vs. 47% post-intervention, p<0.01). There was a significant decrease in time to administration of aHTN (39.7 minutes [SD=33.8] pre-intervention vs. 14.9 minutes [SD=20.7] post-intervention, p<0.01).

CONCLUSION: There was an improvement in rates of and time to aHTN administration to pregnant and postpartum women after implementation of the hypertensive pathway, though rates did not approach 100%. These results are likely mediated by improved workflow, allowing greater nurse autonomy after a physician has initiated the pathway. There was also an increased rate of pre-eclampsia diagnosis in 2019, perhaps reflecting improved recognition. Future work will focus on cognitive aids for srBP recognition.

Table 1. Hypertension diagnoses among participants

Diagnosis	Pre-Intervention (n=304)	Post-Intervention (n=262)	p-value
No hypertension diagnosis	40 (13%)	7 (3%)	
Chronic hypertension	45 (15%)	31 (12%)	
Gestational hypertension	37 (12%)	14 (5%)	<0.01 ¹
Pre-eclampsia	179 (59%)	207 (79%)	
Eclampsia	3 (1%)	3 (1%)	

Data are n (%)

¹Chi-squared test

Table 2. Treatment characteristics of women with hypertensive emergency before and after hypertensive pathway intervention

Variable	Pre-Intervention (n=304)	Post-Intervention (n=262)	p-value
Proportion of women who received aHTN at all	205/304 (67%)	210/262 (80%)	<0.01 ¹
Proportion of women who received aHTN for all instances of srBP	87/304 (29%)	124/262 (47%)	<0.01 ¹
Time to administration of aHTN (min)	39.7 (33.8)	14.9 (20.7)	<0.01 ²

Abbreviations: short-acting anti-hypertensive (aHTN), severe range blood pressure (srBP)

Data are proportion (%) or mean (SD)

¹Chi-squared test

²Wilcoxon rank-sum test

34 Long term effects of pregnancy on cardiovascular function: serial echocardiograms in non-hypertensive and hypertensive mice



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OBJECTIVE: The specific impact of pregnancy on long term cardiovascular function (CVF) is challenging to study due to multiple confounders. A mouse model allows us to study the effect of pregnancy while controlling other factors. Our aim was to evaluate CVF in pregnancy and up to the equivalent of 1 year postpartum (PP) in non-hypertensive and hypertensive murine models compared to non-pregnant (NP) controls.

STUDY DESIGN: Wild type (WT) and endothelial nitric oxide synthase (eNOS) heterozygous females were used to generate the non-hypertensive and moderately hypertensive models, respectively. Mice were divided between pregnant/PP and NP groups. Mice underwent echocardiography (echo) at age-matched time points: 0 = baseline (10 weeks of age), 1 = gestational day 18.5, 2 = 1 week PP or 4