



# Adverse perinatal outcomes associated with elevated blood pressure & stage 1 HTN

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## Background

- In 2017, the **American College of Cardiology (ACC) & American Heart Association (AHA)** reclassified BP in non-pregnant adults to the following:
  - Normal:** Systolic (SBP) <120 & Diastolic (DBP) <80
  - Elevated BP:** SBP 120–129 & DBP <80
  - Stage 1 HTN:** SBP 130–139 OR DBP 80–89
  - Stage 2 HTN:** SBP ≥140 mmHg OR DBP ≥90
- Implications of these categories in pregnancy are still unclear

## Objective

- To evaluate the association of the ACC/AHA BP categories of elevated BP & stage 1 HTN with adverse obstetric & perinatal outcomes

## Study Design

- Retrospective cohort study
- ACC/AHA BP category assigned based on highest SBP & DBP prior to 20 weeks
- Pregnancies with elevated BP and stage 1 HTN each compared to pregnancies with normal BPs
- Inclusion criteria: singleton pregnancy, ≥1 BP prior to 20 weeks, delivery between 1/2014 & 10/2017
- Exclusion criteria: prior diagnosis of chronic HTN, autoimmune or chronic renal disease, fetal anomalies
- Outcomes: gestational HTN, preeclampsia, preterm birth (PTB), neonatal intensive care admission, perinatal death

## Results

- After adjusting for relevant covariates, elevated BP & stage 1 HTN associated with a higher risk of preeclampsia & severe preeclampsia
- Stage 1 HTN associated with PTB & perinatal death

## Conclusion

- Patients with elevated BP & stage 1 HTN prior to 20 weeks are at increased risk of adverse outcomes
- Further research needed to determine optimal care of patients with elevated BP & stage 1 HTN in pregnancy

# The 2017 ACC/AHA reclassified blood pressure categories identify patients with increased risk of preeclampsia, preterm birth, and perinatal death.

Questions?

Take a picture of this QR code to access the poster or email Dr. Tesfalul at [Martha.Tesfalul@UCSF.edu](mailto:Martha.Tesfalul@UCSF.edu).



**Table 1. Maternal & Neonatal Outcomes of Pregnancies with Normal BP vs *Elevated BP***

	Normal BP N = 3,489	Elevated BP N = 1,369	
	n (%)	n (%)	aRR (CI)
Maternal Outcomes			
Gestational HTN	250 (7.2%)	247 (18.0%)	2.2 (1.9-2.6)
Preeclampsia	198 (5.7%)	160 (11.7%)	1.8 (1.4-2.2)
Severe features	107 (3.1%)	78 (5.7%)	1.6 (1.2-2.2)
Neonatal Outcomes			
Preterm Birth			
< 37 wks	181 (5.1%)	88 (6.4%)	1.2 (0.9-1.5)
< 34 wks	47 (1.4%)	20 (1.5%)	1.3 (0.7-2.2)
SGA	443 (12.7%)	147 (10.7%)	0.9 (0.7- 1.1)
NICU admission	390 (11.2%)	196 (14.3%)	1.2 (1.0-1.4)
Perinatal death	13 (0.4%)	7 (0.5%)	1.2 (0.4-3.3)
IUFD	11 (0.3%)	2 (0.2%)	0.5 (0.1-2.1)
Neonatal death	2 (0.1%)	5 (0.4%)	1.8 (0.6-5.4)

**Table 2. Maternal & Neonatal Outcomes of Pregnancies with Normal BP vs *Stage 1 HTN***

	Normal BP N = 3,489	Stage 1 HTN N = 1,092	
	n (%)	n (%)	aRR (CI)
Maternal Outcomes			
Gestational HTN	250 (7.2%)	260 (23.8%)	2.8 (2.3-3.3)
Preeclampsia	198 (5.7%)	164 (15.0%)	2.1 (1.7-2.6)
Severe features	107 (3.1%)	75 (6.8%)	1.8 (1.3-2.4)
Neonatal Outcomes			
Preterm Birth			
< 37 wks	181 (5.1%)	86 (7.9%)	1.4 (1.1-1.9)
< 34 wks	47 (1.4%)	25 (2.0%)	1.5 (0.9-2.6)
SGA	443 (12.7%)	132 (12.1%)	0.9 (0.8-1.2)
NICU admission	390 (11.2%)	151 (14.6%)	1.2 (1.0-1.4)
Perinatal death	13 (0.4%)	8 (0.7%)	2.8 (1.2-6.3)
IUFD	11 (0.3%)	6 (0.6%)	2.1 (0.6-7.1)
Neonatal death	2 (0.1%)	2 (0.2%)	2.4 (0.8-7.4)

*aRR*, adjusted relative risk compared to normotensive patients adjusted for maternal age, nulliparity, race, body mass index, in vitro fertilization, tobacco use, pregestational diabetes, and aspirin use; *CI*, 95% confidence interval