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Blood Pressure Trajectories at Delivery
Hospitalization by Cardiovascular Health:
Evaluating Blood Pressure for Postpartum
Maternal Morbidity Prediction

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Background and Hypothesis

- Hypertensive disorders of pregnancy (HDP) are associated with cardiovascular (CV) morbidity
- We developed and validated models to predict CV morbidity within one year postpartum in individuals with HDP. The next step in prediction is to identify variables to improve the model's fair performance (AUROC=0.73, AP=0.04)
- Blood pressure (BP) trajectories at delivery and postpartum are influenced by baseline CV health, presence of HDP and medications and may be important variables in prediction models
- New BP nomograms are necessary for assessing care and outcomes due to updated BP goals in pregnancy and the declining CV health of women of childbearing years
- **Hypothesis:** BP trajectories at delivery hospitalization differ by HDP status and that those with adverse CV outcomes would have different trajectories

Study Design and Methods

BP data from all birth hospitalizations 2016-2020

BP trajectories were examined by groups:

1. Healthy
2. Gestational hypertension (gHTN)
3. Preeclampsia without severe features (PEC)
4. PEC with SF (SF)
5. Chronic hypertension (cHTN)
6. cHTN/PEC
7. cHTN/SF

CV outcomes (within one-year postpartum): ICD10 codes for renal failure, heart failure, cerebrovascular events

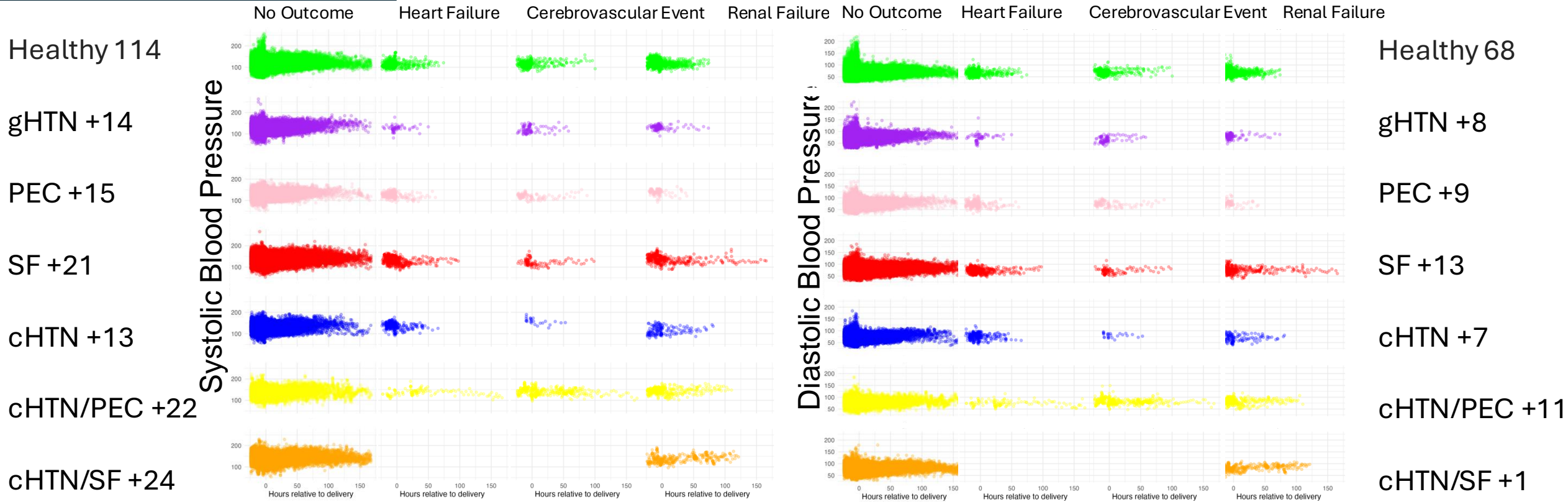
Statistical methods: Linear mixed models with participant-specific intercepts were used to quantify differences in BP trajectories between groups, and between all patients without outcome and with outcomes

Wald test was applied to determine whether effects were statistically significant

Blood pressure by cardiovascular disease group

24,608 deliveries

Average BP values with group estimate increases



all significant

- Healthy: 79.3%, n=19505
- Gestational hypertension (gHTN), 7.4%, gHTN n=1813
- Preeclampsia without severe features (PEC), 3.1% n=755
- Preeclampsia with SF (SF), 3.9%, n=968
- Chronic hypertension (cHTN), 3.8%, n=929
- cHTN and PEC, 1.1%, n=277
- cHTN and SF, 1.5%, n=361

all significant

Conclusion and Discussion

- There were statistically and clinically significant SBP and DBP differences for each hypertensive disease group compared to the healthy group.
- These data serve as new BP nomograms for similar populations.
- Across all patients with and without outcomes, there were no differences in SBP or DBP.
- Including BP trajectories to predicting CV outcomes postpartum is likely unnecessary, as CV outcomes and BP trajectories do not appear to be strongly associated beyond HDP diagnosis.