

Predicting Postpartum Readmissions for Hypertension

Alexander Jean Francois, Melanie Chichester, BSN, RNC-OB, CPLC
Christiana Care Health System, Newark, DE

INTRODUCTION

- Preeclampsia is the leading cause of maternal and perinatal morbidity and mortality, and complicates 2.2% to 6.3% of pregnancies¹; however, postpartum preeclampsia is a specific disorder that occurs after delivery and complicates 5.7% of pregnancies².
- Hypertension (HTN) is a significant reason for readmission, and a potentially costly one in light of changes in Medicaid reimbursement practices for readmissions within 30 days of discharge.
- Symptoms and signs associated with PP include hypertension, severe headache, epigastric pain, visual disturbances, pulmonary edema, and hyperreflexia³.
- Risk factors for the development of postpartum preeclampsia are gestational hypertension, obesity, chronic high blood pressure, and diabetes⁴.
- Complications of postpartum preeclampsia include pulmonary edema, stroke, thromboembolism, and Hemolysis Elevated Liver Low Platelets syndrome (HELLP) ⁵.

Objective: To determine the characteristics of women readmitted postpartum for hypertension as compared to those not readmitted to better identify those at risk in order to improve women's health, possibly prevent readmission, and reduce associated health care costs.

References

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MATERIALS & METHODS

- This was a retrospective cohort study of women readmitted after delivery for hypertension during 2016-2017.
- Data from the Christiana Care Health Systems (CCHS) data warehouse and electronic records were examined for demographics and treatment information for significant predictive markers. A sampling of women who were not readmitted for HTN was used for comparison.

RESULTS

Table 1. Demographics

	Healthy	Readmits	p value
No. of patients	(n = 128)	(n = 128)	
Mean age	28.6	30.9	p = 0.001
Race/ethnicity			p < 0.001
Cauc	59.4%	42.2%	
AA	21.1%	51.6%	
Hisp	0%	0%	
Asian	7.8%	1.6%	
Other	11.7%	3.9%	
Parity			p > 0.05
primip	26.6%	34.4%	
multip	73.4%	65.6%	
Delivery gestation mean	39.3	38.4	p < 0.001
Mean admit wt (kg)	80.6	96.8	p < 0.001
Mode of delivery			p < 0.001
Vaginal	75.8%	44.5%	
Cesarean	24.2%	55.5%	
History of HTN	0%	16.4%	p < 0.001
Antepartum admission	0%	4.7%	p < 0.001
BP meds in labor	0.81%	19.5%	p < 0.001
Headache	0%	7%	p < 0.001
Visual changes	0%	2.3%	p > 0.05
Epigastric pain	0%	0%	p > 0.05
Mag sulfate given in labor	0%	10.9%	p < 0.001

Table 2. Blood pressures

	Healthy	Readmits	p value
Labor admit SBP mean	123.4	137.4	p < 0.001
Labor admit DBP mean	72.8	80.7	p < 0.001
Labor max SBP mean	133.2	154.7	p < 0.001
Labor max DBP mean	81.3	90.9	p < 0.001
Postpartum max SBP mean	132.3	153.5	p < 0.001
Postpartum max DBP mean	87	93.5	0.317
Discharge SBP mean	112.7	129.9	p < 0.001
Discharge DBP mean	76.3	80.9	0.404

Table 3. Fluid status cesarean delivery only

	Healthy	Readmits	p value
Delta fluids 1st day PP mean (mls)	1203	947	0.645
Delta fluids entire stay mean (mls)	-546	-187	0.392

LIMITATIONS

- This is a retrospective study.
- Limited sample size.
- ~13000 women delivered during the study period.
- 139 women were readmitted but only 128 women had complete data available.
- Only patients delivered by cesarean had complete intake and output records.
- Intake/output records are often incomplete or inaccurate.
- Short period of time to complete the project.

CONCLUSIONS

- Seventy-one percent of readmitted women had an elevated BP **at some point during their labor admission**.
- Women with elevated blood pressures during admission for delivery warrant closer observation and follow-up.
- Women are expected to diurese pregnancy fluid in the first 12-24 hours after delivery.
 - Women who were readmitted retained more fluid during hospital stay.
- Women, who are of African American descent, obese, or had a cesarean delivery are at higher risk for readmission (consistent with literature).
- Antepartum admission, treatment with antihypertensives, symptoms of preeclampsia (headache, visual changes), and magnesium sulfate during delivery admission could also be predictive of readmission.

CLINICAL IMPLICATIONS

- Women with risk factors should be followed more closely after discharge, as well as educated regarding warning signs of preeclampsia.
- In particular, **ANY** hypertension during labor or postpartum should merit further monitoring.
- Fluid balances should be more closely monitored after delivery, and a weight prior to discharge might be useful as a marker of failure to diurese.

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