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The Problem: Postpartum Hypertension

In 2018, approximately **10.8%, or 400,000**, of the 3.79 million women giving birth in the United States had high blood pressure ¹

Rates in Wisconsin are higher, with approximately **22%, or 14,000** women affected ²

Postpartum hypertension is amongst the **most common indicator** for hospital readmission and maternal death in the U.S. ³

The aggregated incremental cost due to preeclampsia was found to be \$2.18 billion to the U.S. healthcare system for the first 12 months after delivery – \$1.03 billion in maternal healthcare costs and \$1.15 billion for infants born to mothers with preeclampsia.

Sources:

- 1: National Center for Health Statistics. *Vital Statistics Rapid Release*.
- 2: Wisconsin Division of Public Health. *Births and Infant Deaths*.
3. Sibai, *Etiology and management of postpartum hypertension-preeclampsia*. *AJOG*. 2012;206:470-475.
4. Stevens W, Shih T, Incerti D, et al. *Short-term costs of preeclampsia to the United States health care system*. *Am J Obstet Gynecol*. 2017;217(3):237-248.e16.

Patient-level barriers to hypertension care postpartum

Common Barriers to Conventional Postpartum Care

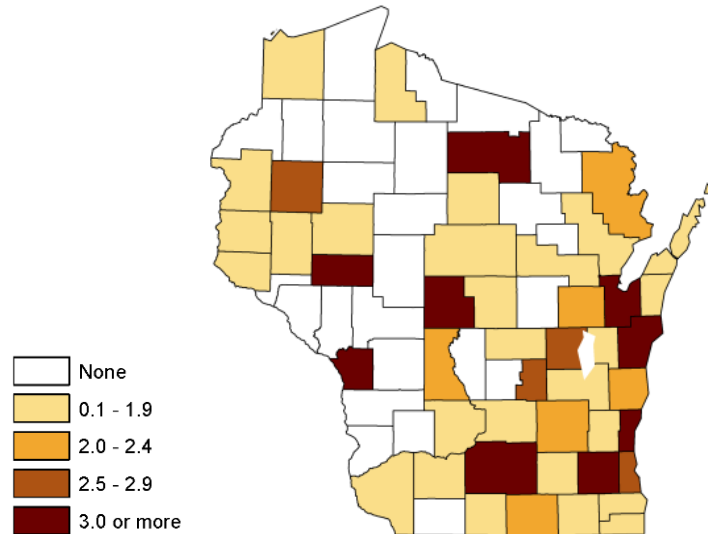
- Commonly women are unable to make it back to the clinic for scheduled postpartum appointments (up to 40% of women do not attend a postpartum visit)
- When pregnancy is complicated by high blood pressure, newborns are more likely to have complications that require Neonatal Intensive Care Unit (NICU) admission
- Lack of education and knowledge for providers and patients
- Social determinants of health
 - Location of residence

Solution: Remote Patient Monitoring

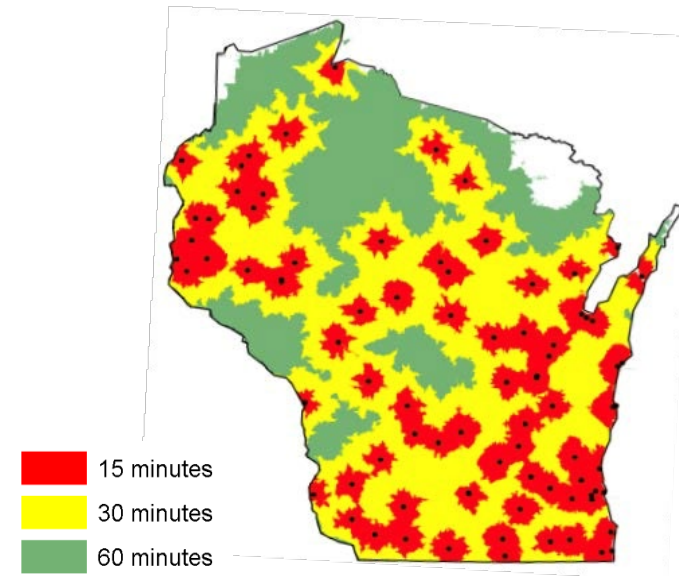
- Uses digital technologies to collect medical and other forms of health data from individuals
- Electronically transmit that information securely to health care providers for assessment and recommendations
- This type of service allows a provider to continue to track healthcare data for a patient once released to home, reducing readmission rates.

Access to care for WI Women

Ob-Gyns per 10,000 Women



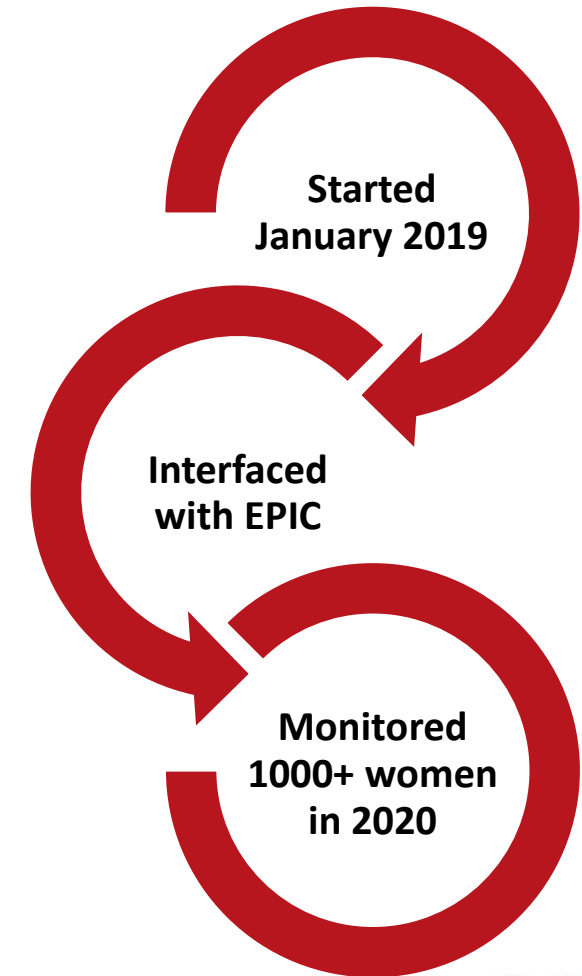
Drive Times to Hospital with Maternity Centers



Staying Health After Childbirth (STAC)



STAC helps postpartum patients with high blood pressure safely monitor and treat their high blood pressure from the comfort of their home with telehealth guidance and support from health professionals



Program Details



Primary Childbirth Admission

- Diagnosis of hypertension related disorder during pregnancy or postpartum

Hospital Discharge

- Receive telehealth equipment & training pre-discharge

Home

- Daily vital signs taken by patient
- Automatic transmission of data to a secure (HIPPA compliant) remote patient monitoring server/local EMR

Ongoing Monitoring

- Direct contact with nurse daily as needed for 6-weeks postpartum
- Early home treatment of elevated blood pressure (asymptomatic)
- Program physician oversight and consultation as needed

End of Monitoring

- Equipment return/summary report to primary provider
- 6-week postpartum in-person visit

Competitive Advantage

Home blood pressure monitoring program that is:

- Staffed by obstetric nurses and led by a Maternal-Fetal Medicine (MFM) physician expert
 - Management of patients is guided by standard treatment algorithms
- Interfaced with hospital electronic medical record (EMR) systems with real-time vital signs
- Designed for postpartum patients, incorporating phone and video visit capability with standardized protocols
- Collaborative summary of care at the end of their postpartum period with PCP

STAC Data

- Demonstrated a **significant reduction** in hypertension-related postpartum hospital readmission
- Exhibited the ability to achieve **close follow-up and compliance** with American College of Obstetrics and Gynecology recommendations
 - When compared to known low compliance with standard postpartum care

TABLE

Outpatient outcomes in telehealth vs standard outpatient care participants

	Telehealth (n=214)	Standard outpatient care (n=214)	P value	RR (95% CI)	Adjusted P value	Adjusted RR (95% CI)
Healthcare utilization through 6 wk						
Hypertension-related hospital readmissions ^a , n (%)	1 (0.5)	8 (3.7)	.037	0.13 (0.02–0.99)	.045	0.12 (0.01–0.96)
Hypertension-related emergency or triage room visits ^a , n (%)	11 (4.6)	13 (6.0)	.831	0.76 (0.38–1.85)	.808	0.81 (0.36–1.80)
Number of blood pressure reviews within 10 days of delivery ^a , n (%)	202 (94.4)	129 (60.3)	<.001	1.56 (1.39–1.76)	<.001	1.59 (1.36–1.77)
6 wk study endpoint						
Number of participants on antihypertensive treatment regimes ^a , n (%)	57 (26.6)	37 (17.3)	.027	1.54 (1.06–2.23)	.866	1.03 (0.74–1.44)

Data are expressed as mean, median (interquartile range), or n (%).

CI, confidence interval; RR, relative risk; SD, standard deviation.

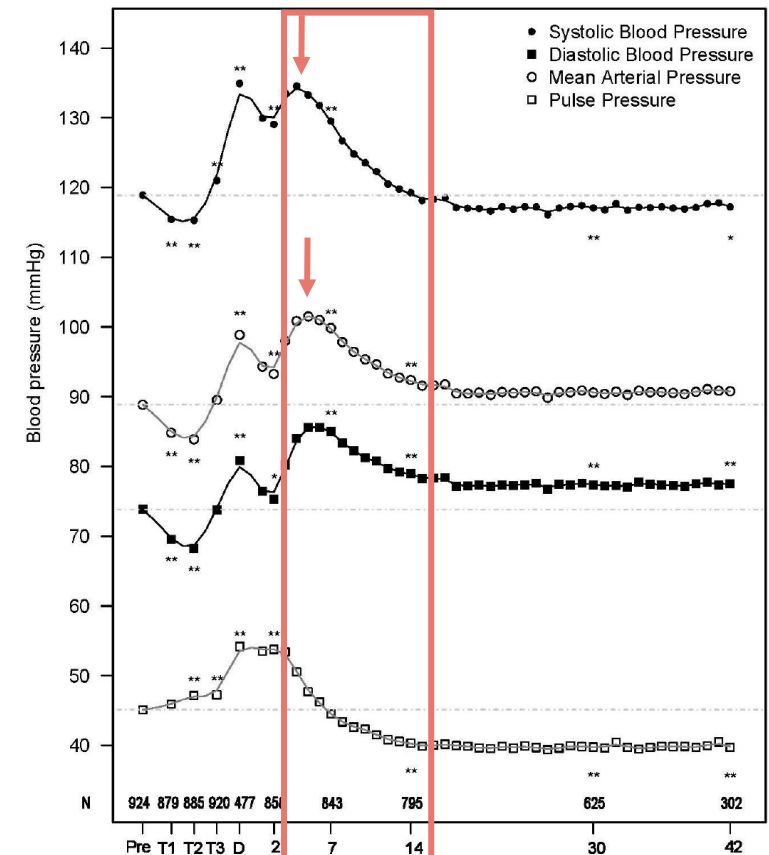
^a Adjusted for the delivery mode, insurance status, antihypertension medication use at the time of hospital discharge, and the total number of postpartum admission days.

Hoppe. Telehealth with remote blood pressure monitoring for postpartum hypertension. Am J Obstet Gynecol 2020.

STAC Data

- Early **detection and treatment** of elevated blood pressure
 - Preventing unnecessary trips to the doctor's office & readmissions
 - Allowing more time at home with baby
- May provide the opportunity to decrease the rising maternal **morbidity and mortality** in the United States

441 **Figure 2.** Longitudinal Blood Pressure Patterns of Women with Hypertensive Disorders
442 of Pregnancy.



443 Shown curves are estimated average systolic, diastolic, mean arterial, and pulse
444 pressure patterns of the full cohort. Comparison of blood pressure measurements to
445 baseline was made by mixed effects longitudinal data analysis controlling for maternal
446

Feedback

*"I felt
empowered and
safe"*

*"I would recommend
this program to all
women in my
situation"*

*"I received such
excellent monitoring
and care"*

Of the 214 women who participated in the research study, **126 (59%)** responded to the satisfaction survey

91%

Would recommend
this intervention to
other women with
hypertension

95%

Would rather
participate in home
monitoring vs. going
to the hospital/clinic

Program participation

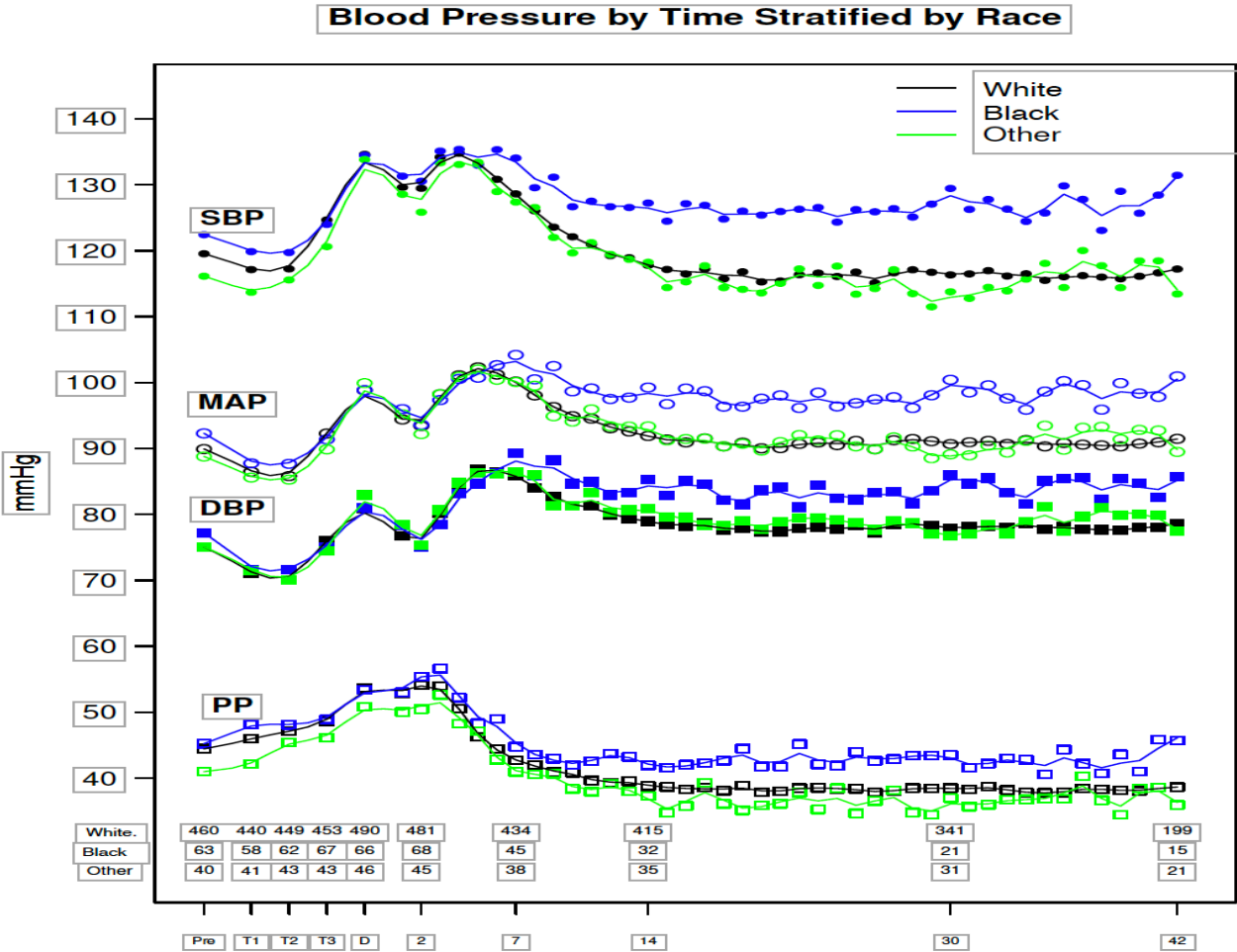


Fig. 2: Estimated mean BP at all time points and stratified by race

Day	Participation with submission by timepoint (%)		
	Overall N=619	White N=495	Black N=70
2	95.9	97.1	97.1
7	83.5	87.7	64.2
14	77.9	83.8	45.7
30	63.5	68.8	30.0
Overall 32/42 days (75%)	Average Percent Participation (% ,SD)		
	71.1 (28.4)	74.9 (26.3)	45.9(28.5)

How Would Wisconsin Patients/Healthcare /Payors Benefit From STAC



Reduced preventable admissions

- Associated with annual excess of \$36,550,000 in inpatient costs



Improved Postpartum Follow-up

- 50-70% of women do not follow-up with standard postpartum care
- We achieved data from 94% of women in the recommended follow-up time



Increased Patient Satisfaction

- 95% of women would rather participate in home monitoring vs. going to the hospital or clinic

Program Development and Current Projects/Funding

- Initiated the UPH-Meriter program in 1/2019
- All home data collection interfaces with UPH's EPIC.
- 2020: 1000+ woman
 - Readmission rates of participants are approximately 0.5%
- Current grant funding from the Wisconsin Partnership Program
 - 1. To expand a remote monitoring-based PP HTN program by incorporating community partnerships to offer basic PP care, lactation, social, and mental health support for Black women in Wisconsin.
 - 2. Investigate the improvement in participation of all clinical measures of PP care with the inclusion of community-partnerships in our care model; HTN care, breastfeeding initiation and continuation, and PP mental health/social support utilization.
- Current grant funding from UW-Madison ICTR D&I Launchpad/Wisconsin Partnership Program
 - Program initiation and sustainability toolkits/videos
 - Website development
 - Patient videos

Programmatic Growth Plan

- We would like to disseminate STAC!
- Disseminate and implement STAC to hospitals across Wisconsin/Midwest
- Explore program sustainability measures
 - Funding for hospitals to initiate
 - Reimbursement options
- Continue to improve outcomes for postpartum women with hypertension and beyond.....
 - Telelactation
 - Telemental Health
 - Community Partnerships
 - PNCC, Doulas, CHW's and beyond

STAC Resources



- Website
 - <https://www.obgyn.wisc.edu/stac>
- STAC Coaching Team
 - Training videos
- Vendor: Resideo
- Operational Toolkit
 - Treatment algorithms
- Customizable program resources/patient materials
- Billing Toolkit
- EMR Integration option



Questions/Comments?????

www.obgyn.wisc.edu/stac