

# Digitization of a labor and delivery unit hypertension treatment protocol is associated with faster time to treatment and reduced hypertensive episode duration

James Christmas, MD<sup>1</sup>; Jennifer Lee McAlister, PharmD<sup>1</sup>; Sue Cadwell, MSN, RN, NE-BC<sup>1</sup>; John Beard, MD<sup>2</sup>



## Background and Significance

- Acute severe hypertension (BP  $\geq$  160/110 mmHg) for more than 15 minutes is an obstetric emergency.
- ACOG has well articulated guidelines for management of BP in pregnant and recently pregnant women.
- The Joint Commission has standard PC.06.03.01: Reduce the likelihood of harm related to maternal severe hypertension/preeclampsia.



## Introduction

- Diagnosis and early effective therapy of hypertensive disorders of pregnancy may be compromised by non-standardized processes, provider responsibility for multiple patients, and dependence on individuals' vigilance.
- This study evaluates the impact of workflow digitization on maternal hypertension on a labor and delivery unit.



## Methods

- Retrospective, deidentified chart review study was exempt from IRB approval.
- “Pre-Digital” group from July 1, 2020, to November 2, 2020, managed with the hypertension standard of care.
- “Digital” group from November 3, 2020, to August 31, 2021, managed after the digitization of the hypertension care treatment protocol (Mural Virtual Care, GE HealthCare, Chicago, IL.)

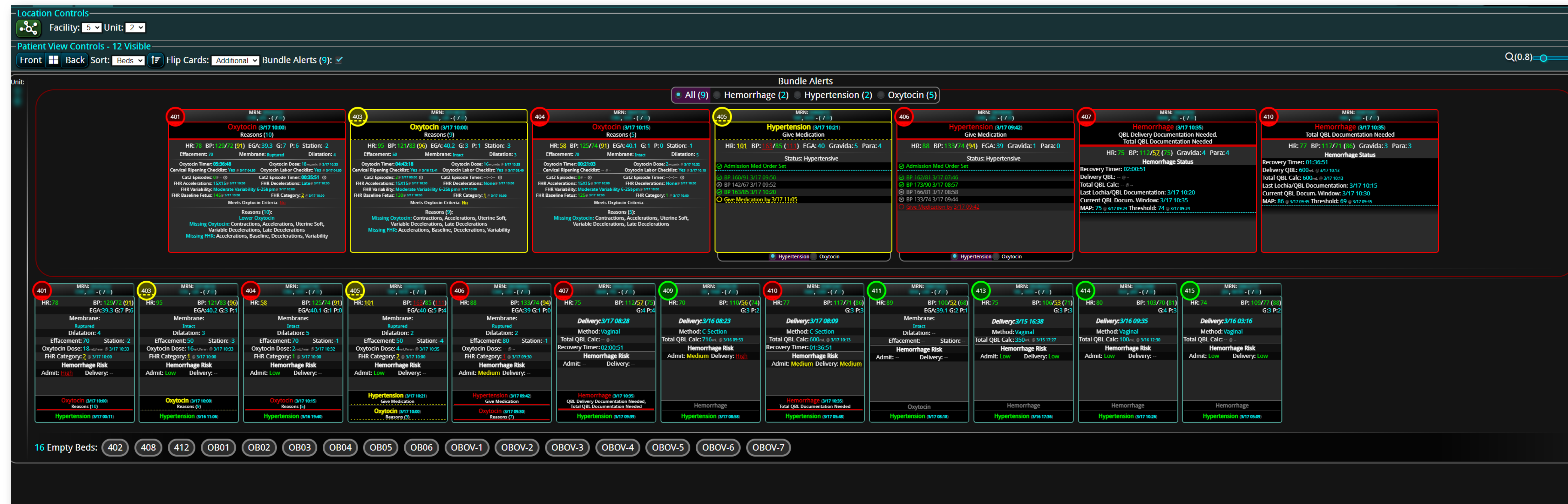


## Results

- Pre-Digital group included 1327 admissions, Digital group included 3515 admissions.
- Mean monthly percentage of patients with blood pressure reassessed less than 30 minutes from an initial high blood pressure was 65% in the Pre-Digital group versus 70% in the Digital group.
- The mean monthly time for an antihypertensive medication to be administered after the second high blood pressure was 54.8 minutes in the Pre-Digital group versus 29.9 minutes in the Digital group.
- The mean monthly duration of hypertensive episodes for patients given at least one medication was 153.9 minutes in the Pre-Digital group versus 83.1 minutes in the Digital group.

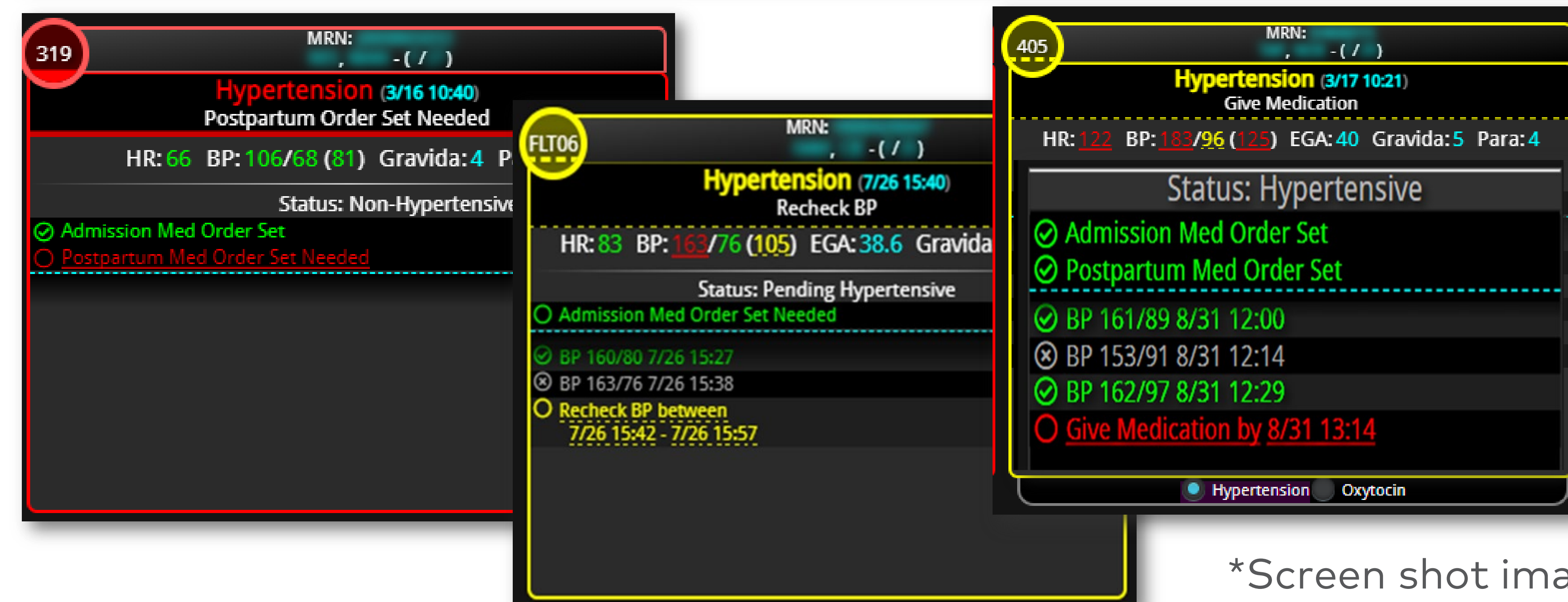
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## Digital patient surveillance platform\*

- Centralized visibility of electronically transmissible data from integrated data sources.
- EHR, lab, IV pump, Biometric units, etc.
- Clock function enables timely diagnostic and therapeutic interventions and alerts clinicians of practice deviations.
- Standardized evaluation and treatment algorithms.
- Color-coded alerts and escalation pathway.
- Historical, clinical, laboratory data available to facilitate timely and appropriate care.
- Analytics utilized to visualize data and drive continuous quality improvement.



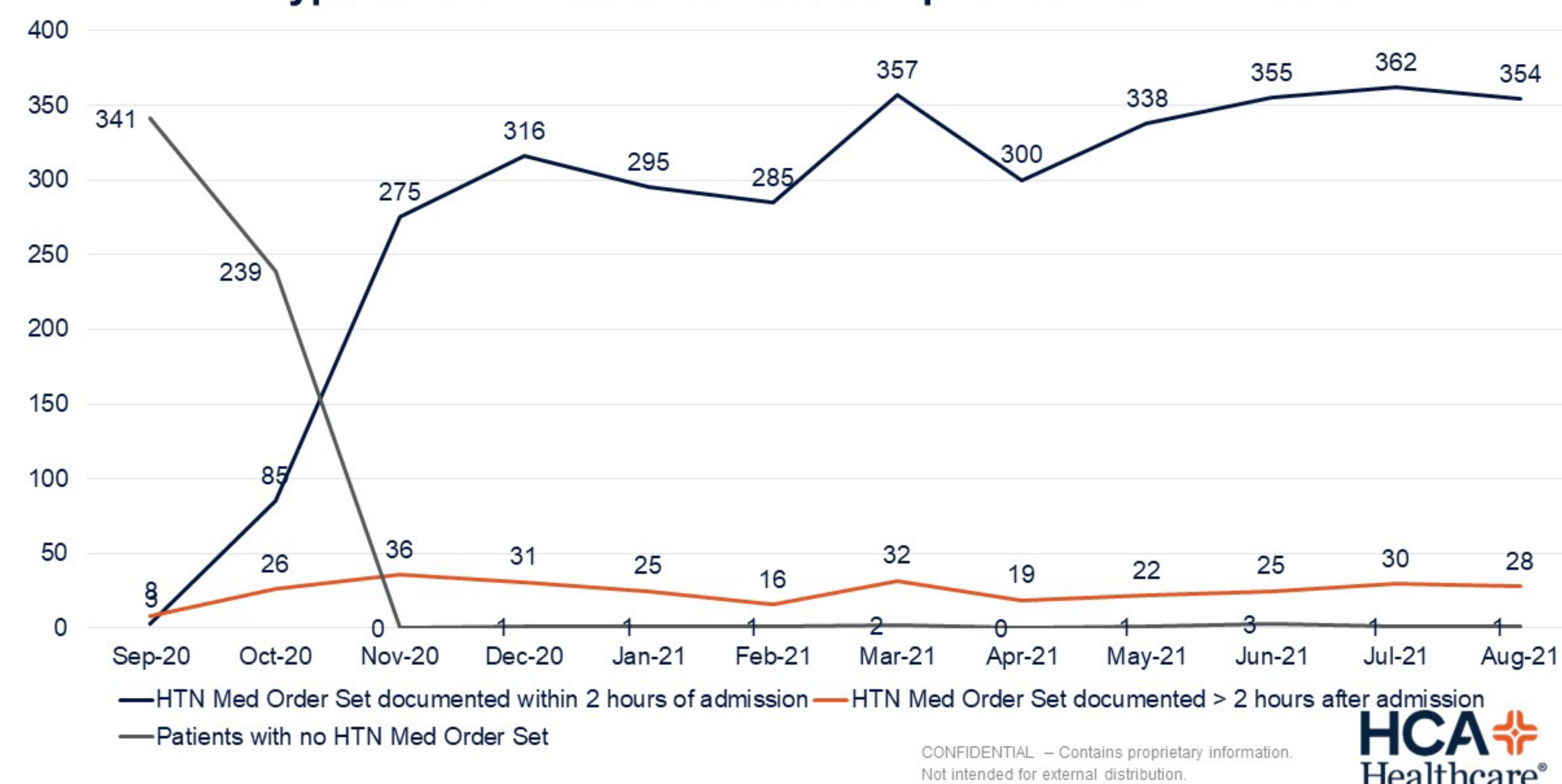
\*Screen shot images taken from Mural Virtual Care (GE HealthCare, Chicago, IL)



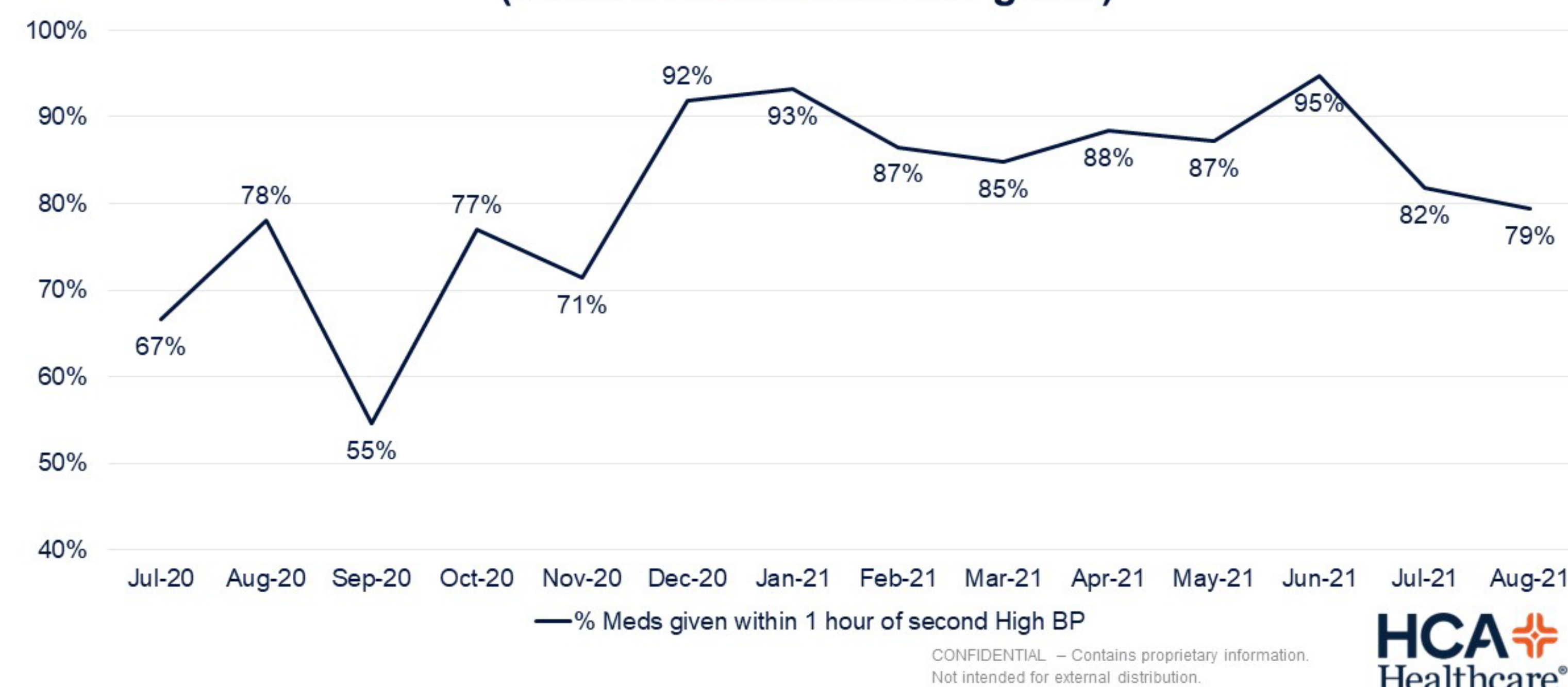
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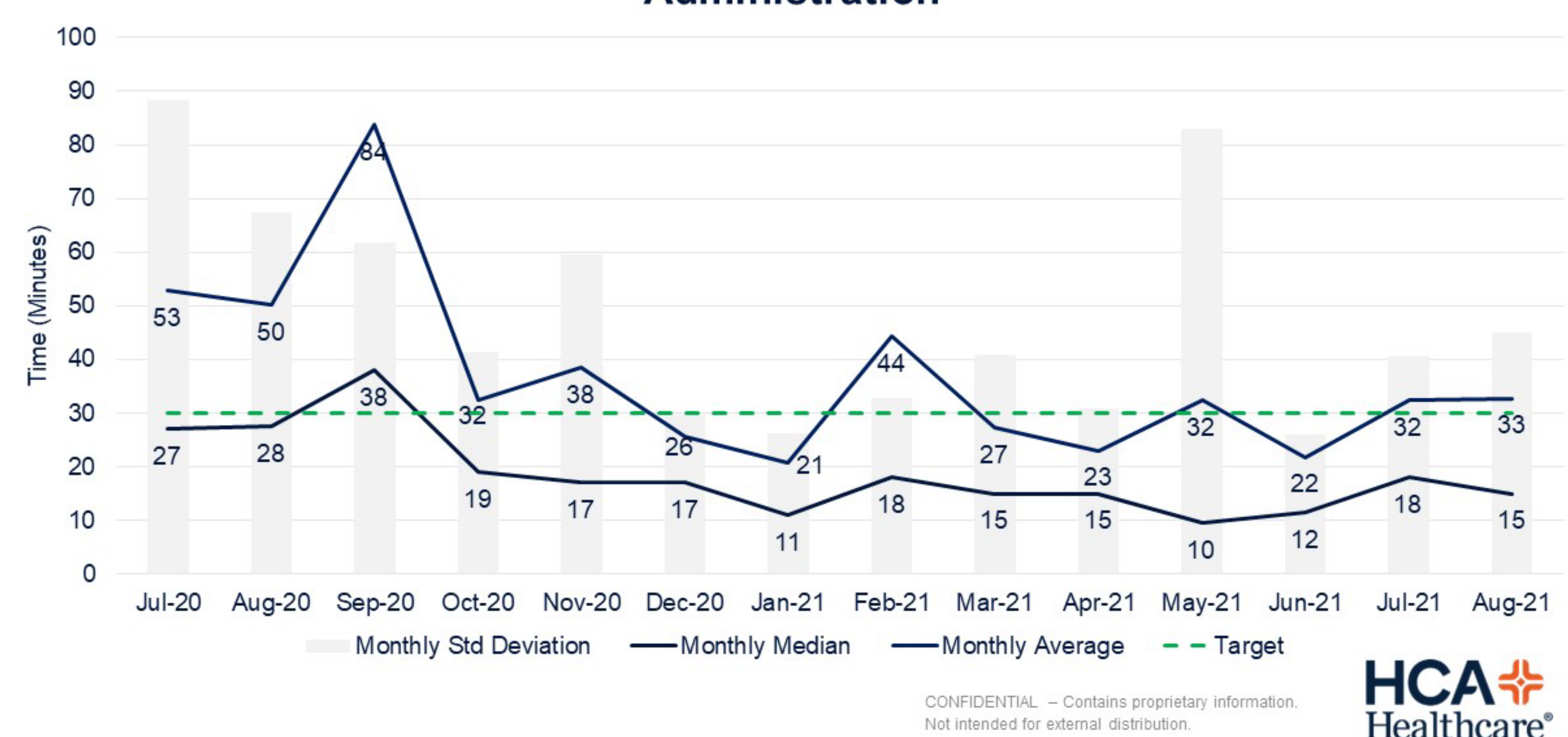
Hypertension Med Order Set Compliance within 2 hours



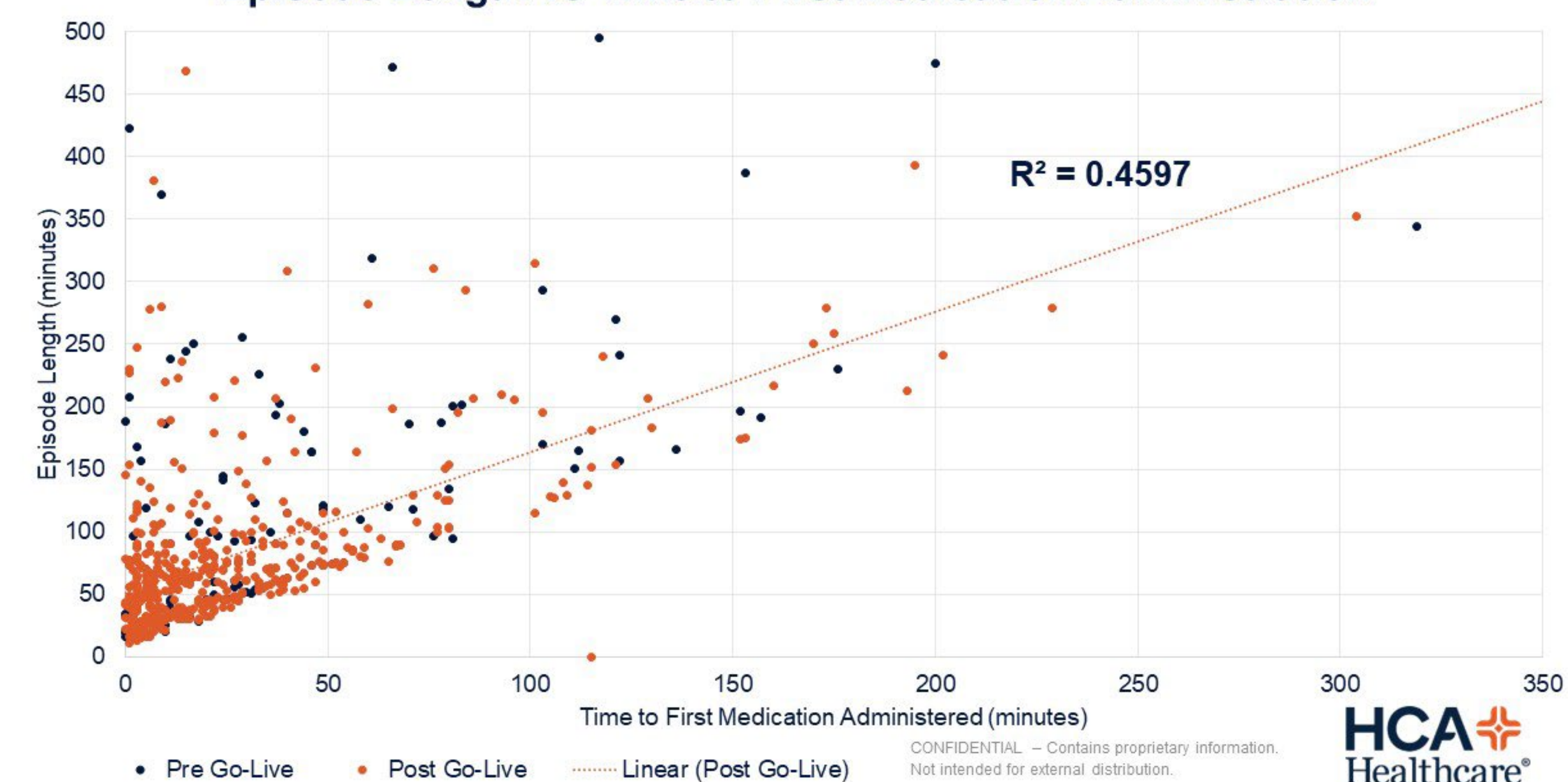
Hypertensive Medication given within 1 hour of second high blood pressure (when a medication was given)



Time from Second confirmed High BP to Medication Administration



Episode Length vs Time to First Medication Administration



## Conclusion

Digitization of workflows / patient data and population surveillance on a labor and delivery unit was associated with faster time to treatment and reduced hypertensive episode duration in maternity patients.