

Sentinel Platform Reduces Blood Pressure and Crisis Hypertension (2020 Update)

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INTRODUCTION

We assessed the efficacy of mobile health hypertension monitoring for patients enrolled in Medicare's Remote Physiologic Monitoring (RPM) program.

HYPOTHESIS

Uncontrolled hypertension is an increasing epidemic associated with cardiovascular disease. Despite many available treatments, the average time to blood pressure control is slow. Lack of access to patient information including blood pressure data outside of the clinic setting means that clinicians cannot easily titrate medications. We hypothesized that mobile health monitoring and communication with clinicians in a Medicare cohort would decrease the hypertension burden and mitigate crisis blood pressure in patients.

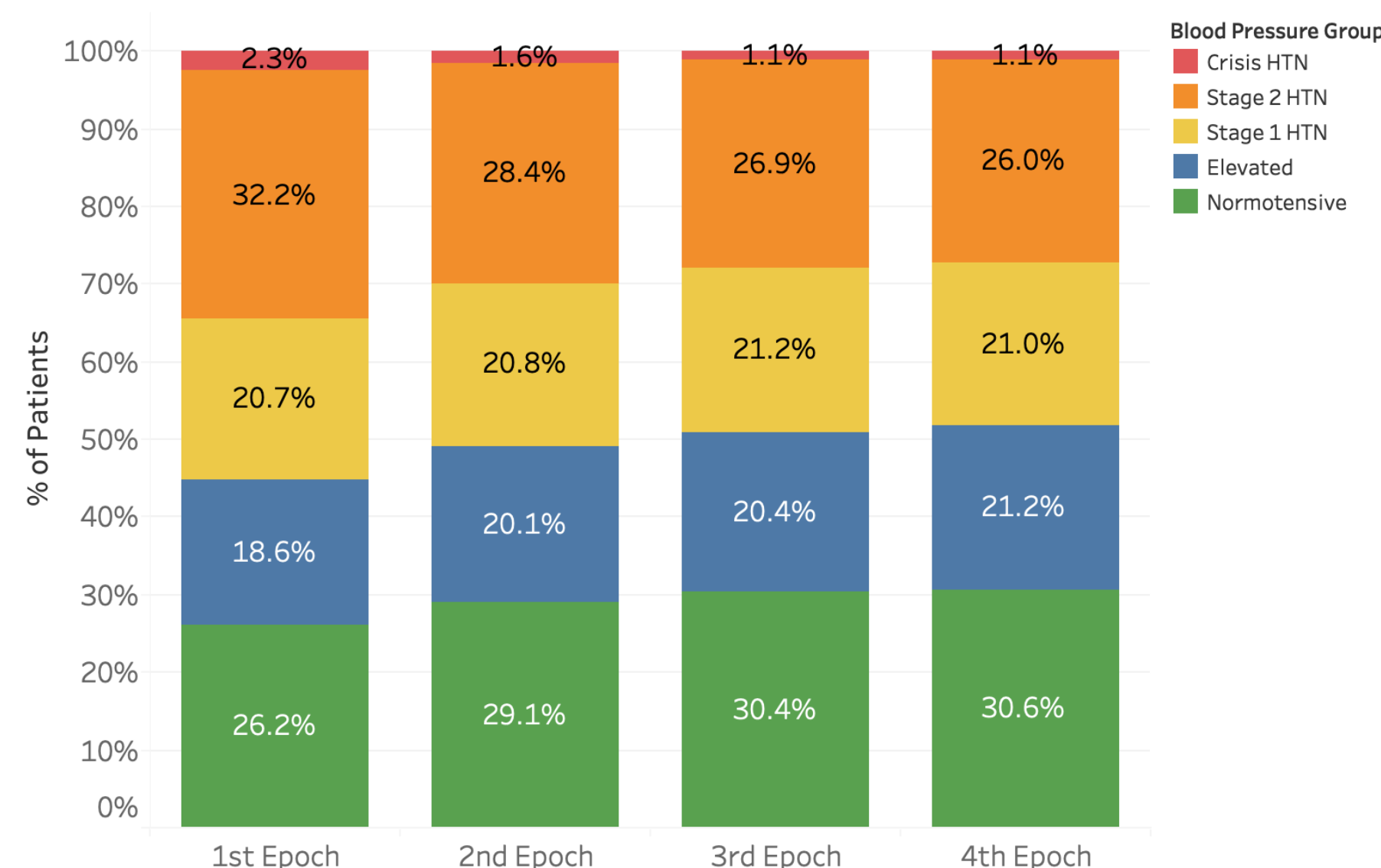
METHODS

1,544 patients who had contributed ≥ 20 blood pressure readings in a remote monitoring program were included in the study population, spanning clinics in Florida, Tennessee, Arizona, Ohio, Texas, New York, and California. Eligible patients carried a diagnosis of hypertension and had been seen by their doctor within the year they were referred. The mobile health platform was utilized to aggregate blood pressure data, which was analyzed by a remote care team and provided to clinicians on a monthly basis. Patients' doctors and their teams reviewed and managed the patients based on the data provided by the mobile-cloud platform. The remote monitoring program provided alerts to clinic staff for patients who had blood pressures greater than 180mm Hg systolic (crisis hypertension) for expedited decision making.

RESULTS

1,544 patients who provided >20 BP readings from January 2018 to January 2020 were included in the study. A total of 297,731 blood pressure readings were included in this analysis. Patient readings were stratified by epoch chronologically. The first epoch (E1), represented the first 25% of readings in the remote monitoring system, and the fourth epoch (E4) represented the final 25% of readings. From E1 to E4, patients saw an average decrease of 3.8 mmHg in systolic blood pressure (132.9 vs. 129.1; $p<0.001$). The proportion of readings in crisis hypertension range decreased from 2.3% to 1.1%; $p=0.03$), while the amount of hypotensive readings did not substantially change (1.0 vs. 1.3%; $p=0.47$).

Figure 1: HTN Stage by Epoch of Reading



CONCLUSIONS

In agreement with our hypothesis, patients in a Medicare cohort achieved a significant reduction in blood pressure via remote monitoring as well as a significant reduction in crisis blood pressure readings. RPM offers a scalable solution to resistant hypertension.

Figure 2: HTN Stage by Epoch of Reading Stage II and Crisis Patients (N=590)

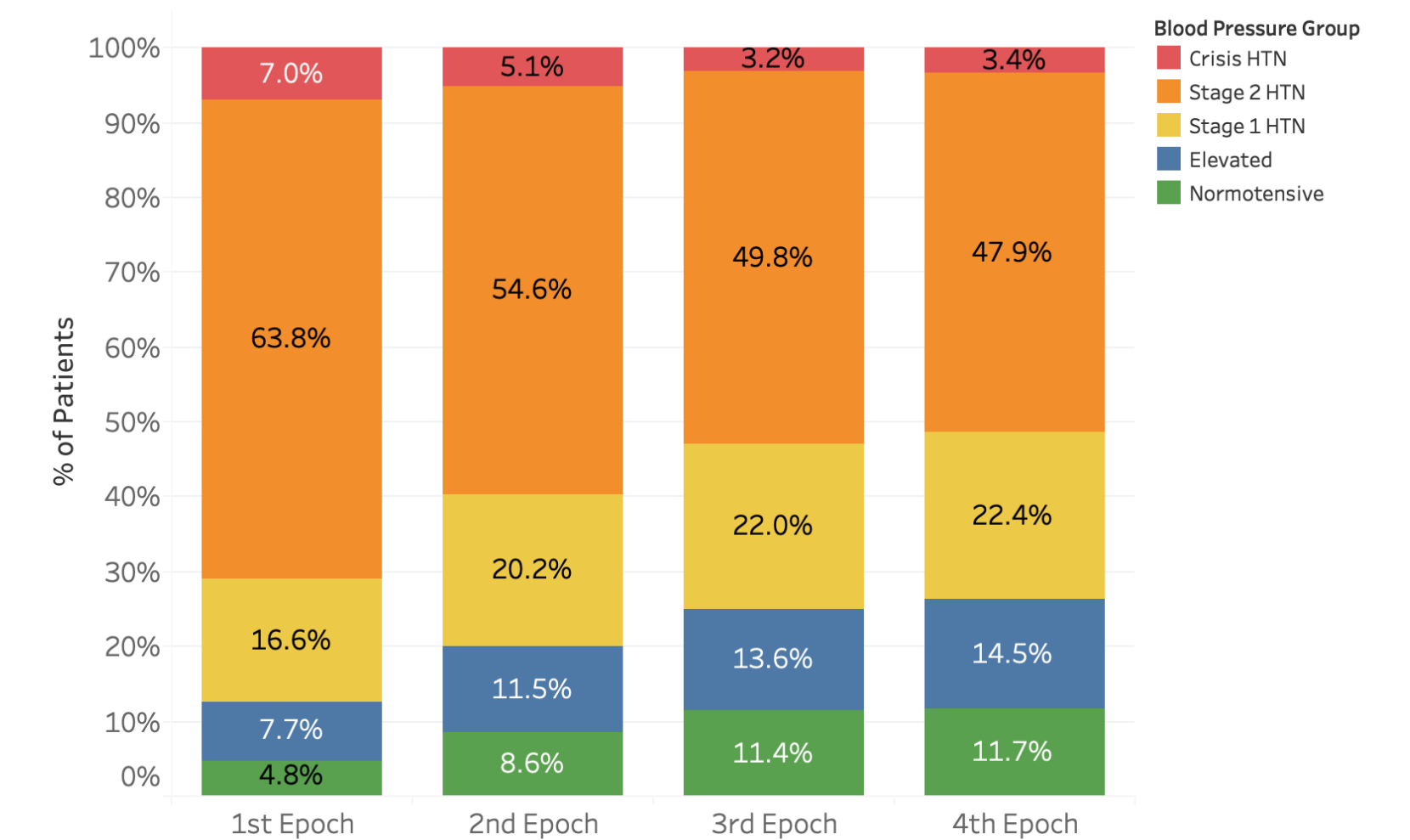


Figure 3: Average SBP by Epoch of Reading Stage II and Crisis Patients (n=590)

