Using an Evidence-Based Treatment Protocol for Hypertension Management via Telehealth: Exploring Patterns of Protocol Deviation

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INTRODUCTION

- Achieving hypertension control at a patient and population level remains a challenge.
- The 2017 American College of Cardiology/American Heart Association (ACC/AHA) guideline recommends the use of telehealth strategies to help improve blood pressure control for individuals with hypertension.[1]
- Several organizations including the American Heart Association and American College of Cardiology encourage the use of protocol driven management of hypertension.[2]
- While we recognize that protocol-driven care is an essential component to obtaining improved hypertension control, little is known about the reasons behind protocol deviations and the direct effect they may have on clinical outcomes in the setting of hypertension.

OBJECTIVE

The objective of this study was to examine reasons, determinants, and effects of medication intensification protocol deviations in a telehealth program utilizing home blood pressure telemonitoring and remote protocolled medication titration for hypertension management.

METHODS

DESIGN:

- A single-center prospective telemedicine pilot study was conducted with 120 participants with uncontrolled hypertension at the University of Mississippi Medical Center (UMMC), Center for Telehealth.
- A hypertension protocol was developed, and a collaborative practice agreement was implemented between the pharmacist and physician.
- Patients received a telemonitoring kit which included an iPad tablet and wireless blood pressure cuff with Bluetooth capability

INCLUSION CRITERIA:

- Age 21 years or older
- Two clinic encounters with a UMMC clinic provider in the previous 12 months with a systolic BP ≥ 140 mmHg and/or a diastolic BP ≥ 90 mmHg

FOLLOW UP:

- Blood pressure reviews were conducted by the pharmacist every 3 weeks throughout the 6 month program.
- Eight BP measurements were needed for medication intensification at each review.
- An average goal of <130/80 mmHg was set.

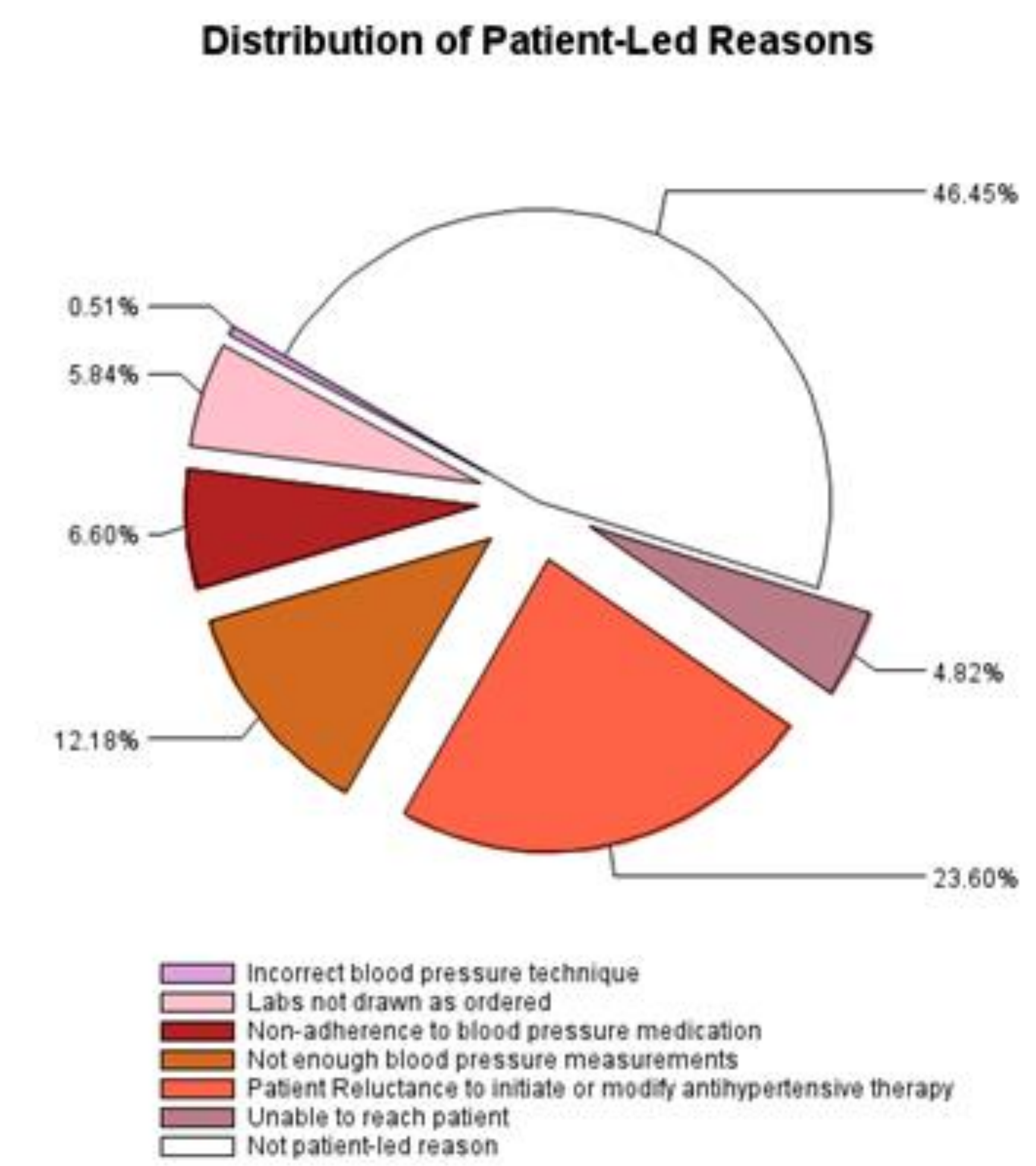
STATISTICAL ANALYSIS:

- The effect of protocol deviation percentage on BP goal attainment was estimated using logistic regression.

RESULTS

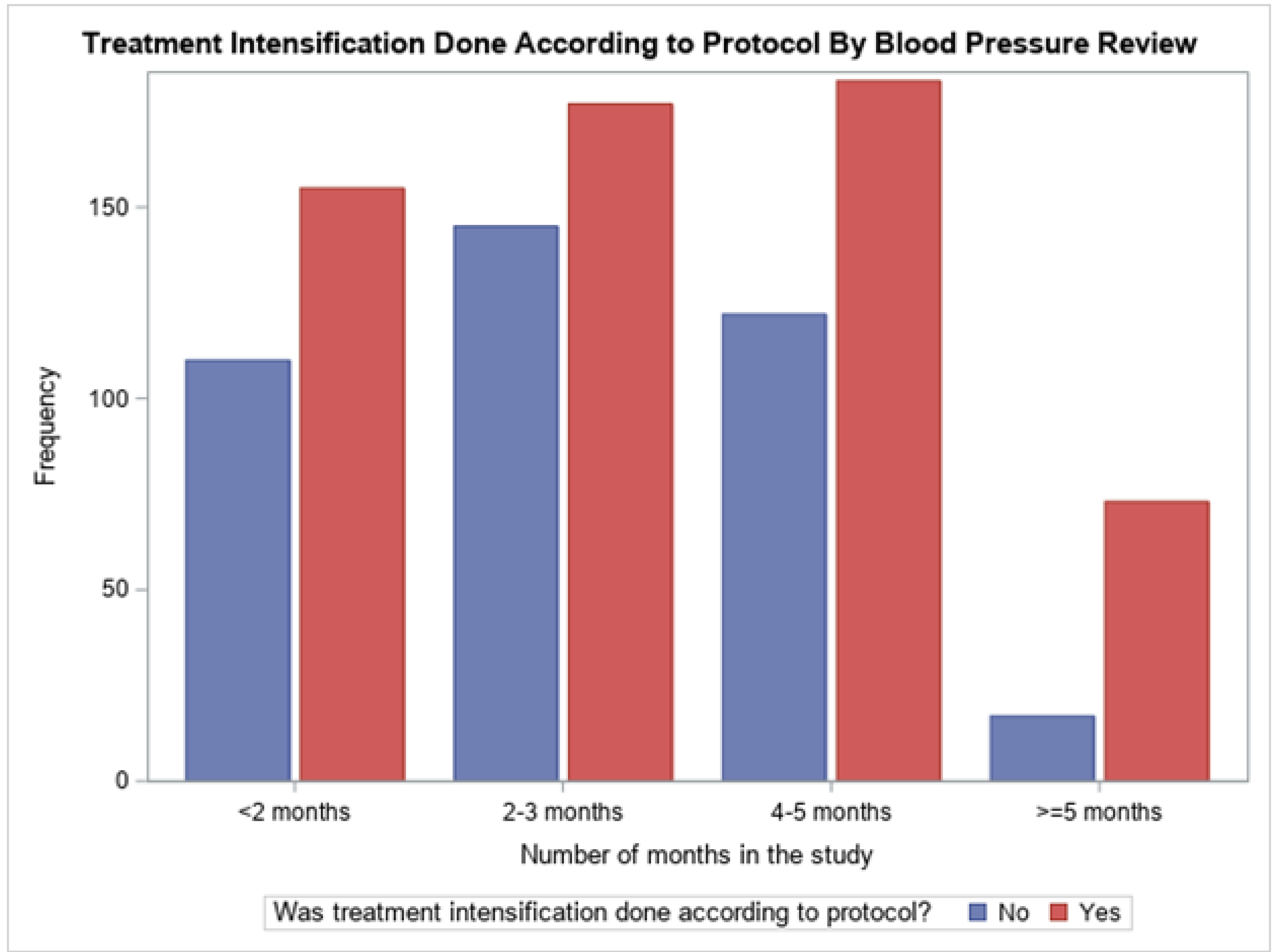
- Among 120 participants, 103 completed the study from August 2018 through June 2020.
- A total of 982 blood pressure reviews were completed by the pharmacist with 394 (40%) deviating from the protocol.
- Protocol deviations were classified into three main categories: patient-led factors (53.6%), justifiable clinical reasons (42.6%), and miscellaneous issues (3.8%).
- The most common rationale identified was patient reluctance to initiate or modify antihypertensive therapy.

FIGURE 1



- The mean number of deviations per participant was 3.31.
- There were significant differences in percentages of protocol deviations over the study when comparing blood pressure control at baseline versus the end of the study.
- Participants with more protocol deviations had less blood pressure control at the end of the study.
- Based on a logistic regression model, it was determined that for every 1% increase in protocol deviation, we expect to see about a 6% decrease in the odds of having BP goal attained at the last BP review.

FIGURE 2



DISCUSSION

- Protocol deviations occurred 40% of the time with patient led factors being the most common.
- Length of protocol may have been a limitation. It was determined that there is a wide variability in the time that it takes participants to reach goal.
- More work is needed to determine strategies for optimal protocol design and implementation
- Protocol deviations are common in remote hypertension management using home blood pressure telemonitoring.
- These results suggest that flexibility, inter-professional team care, and individualized patient goals are needed to optimize clinical outcomes.

REFERENCES

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