

HEALTH RESEARCH ABSTRACT SUBMISSIONS

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Title of Research *	Pharmacist-Physician Co-Management of Hypertension Reduces Blood Pressure Throughout 24-Hours
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Introduction & Purpose *

Hypertension affects 65 million persons in the United States and is associated with increased risks for stroke, myocardial infarction, and heart failure.^{1, 2} Blood pressure (BP) control among patients with hypertension remains below national targets. A large number of effective antihypertensive medications are available, suggesting problems are not due to lack of effective drugs, but also include such barriers as access to care and clinical inertia. Many strategies have been evaluated to improve BP control in the United States including algorithmic approaches to drug selection, case-management, and pharmacist-physician collaboration.³⁻⁶

Team-based care of hypertension can lead to improved BPs.⁷ Bogden, et al. found that a physician-pharmacist teamwork approach to hypertension treatment in 95 hypertensive patients more than doubled BP control in the intervention group compared to patients receiving usual care (55% versus 20%, $p < 0.001$).⁸ A recent meta-analysis of 37 studies utilizing pharmacist or nurse team-based interventions showed pharmacist intervention to have a great impact in improving BP.⁹ Strategies associated with a reduction in mean SBP include pharmacist treatment recommendations (-9.30 mm Hg), education about BP medications (-8.75 mm Hg), intervention by nurses (-4.80 mm Hg), and use of a treatment algorithm (-4.00 mm Hg). In a prospective, cluster randomized controlled trial, Carter, et al. demonstrated that a team-based approach to BP management resulted in improved BP control and a significant decrease in mean SBP.⁶ Blood pressure was controlled in 63.9% of the patients in the intervention group versus 29.9% in the control group ($p < 0.001$). For the intervention group mean SBP decreased by 20.7 mmHg compared to 6.8 mmHg in the control group ($p < 0.05$ for between group comparison).

Although pharmacist collaborative management in hypertensive patients has been shown to improve BP control as determined from office readings, the impact of this strategy has not been evaluated using ambulatory BP measurements. It is well documented that office BP overestimates the antihypertensive response to therapy, while ambulatory BP measurements are thought to more accurately reflect the patient's true BP.¹⁰⁻¹² Even after adjustment for traditional cardiovascular risk factors such as office BP, ambulatory BP measurements are strongly predictive of the risk of end-organ damage.^{13, 14} This is likely due to the ability of ABPM to avoid problems associated with office BP such as inappropriate measurement technique and the white coat phenomenon. Therefore, as with any new antihypertensive medication seeking approval, the true effect size of interventions to control BP should be established using 24-hour ambulatory BP monitoring data. The objective of this study is to report the 24-hour ambulatory BP monitoring results of a pharmacist-physician collaborative model of hypertension management from a previously reported study.¹⁵

Experimental Design *

Methods:

Design: Prospective, cluster-randomised, controlled clinical trial.

Setting: Five primary care clinics in Iowa, USA.

Patients: 179 patients with uncontrolled hypertension, aged 21-85 years, receiving 0-3 antihypertensive medications at baseline.

Intervention: Patients were randomized by clinic to receive pharmacist-physician co-management (intervention) or usual care (control). At intervention clinics, following BP measurement by a research nurse, patients met with a pharmacist. Pharmacists identified barriers to BP control, counselled on diet and lifestyle modifications, and adjusted antihypertensives in collaboration with the patient's primary care provider. At control clinics, patients met with a research nurse and BP measurements were forwarded to the patient's primary care provider for further action. Scheduled visits occurred in both groups every 2 months for a minimum of 9 months. All patients underwent ambulatory BP monitoring (ABPM) at baseline and 9 months. Baseline ABPM data was carried forward for patients not completing a final ABPM.

Results *

ABPM data was available for 175 patients. At study end, the number of antihypertensives differed by only 0.5 per person (intervention: 1.5 ± 1.0 to 2.4 ± 0.9 ; control: 1.4 ± 1.0 to 1.9 ± 1.0). Mean (SD) ambulatory SBPs (mmHg) were significantly reduced in the intervention compared to control group (daytime: -14.3 ± 11.6 vs -2.7 ± 11.6 ; nighttime -11.1 ± 14.4 vs -3.4 ± 13.3 ; 24-hour -13.2 ± 11.3 vs -2.9 ± 10.7 ; $P < 0.001$ for all intervention vs control comparisons). Mean reductions in office SBPs were of higher magnitude (-28.9 mmHg intervention vs, -17.3 mmHg control) than ABPM readings. ABPM revealed more patients receiving the intervention had a controlled 24-hour BP profile at the end of the study (73% vs 42.3%; $P < 0.001$).

Conclusions *

Despite overestimation of BP differences by office measurements, pharmacist-physician co-management achieved significantly greater reduction in BP throughout 24-hours as evidenced by ABPM readings

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