CLINICAL RESEARCH STUDY

THE AMERICAN JOURNAL of MEDICINE®

Evaluation of Pharmacist Care for Hypertension in the Veterans Affairs Patient-centered Medical Home: A Retrospective Case-control Study

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ABSTRACT

OBJECTIVE: The study objective was to evaluate a pharmacist hypertension care management program within the patient-centered medical home.

METHODS: This was a retrospective case-control study. Cases included all patients with hypertension who were referred to the care management program, and controls included patients with hypertension who were not referred to the program during the same 1-year period. Each case was matched to a maximum of 3 controls on the basis of primary care physician, age ±5 years, gender, diagnoses of diabetes and kidney disease, baseline systolic blood pressure ±10 mm Hg, and number of unique antihypertensive medications. Pharmacists provided a hypertension care management program under an approved scope of practice that allowed pharmacists to meet individually with patients, adjust medications, and provide patient education. Primary outcomes were systolic blood pressure and diastolic blood pressure at 6 and 12 months. Multivariate regression models compared each blood pressure end point between cases and controls adjusting for age, comorbidities, baseline blood pressure, and baseline number of blood pressure medications.

RESULTS: A total of 573 patients were referred to the hypertension program; 86% (465/543) had at least 1 matched control and were included as cases in the analyses; 3:1 matching was achieved in 90% (418/465) of cases. At baseline, cases and controls did not differ with respect to age, gender, race, or comorbidity; baseline blood pressure was higher (139.9/80.0 mm Hg vs 136.7/78.2 mm Hg, $P \leq .0002$) in the cases compared with controls. Multivariate regression modeling identified significantly lower systolic blood pressure for the cases compared with controls at both 6 and 12 months (6-month risk ratio [RR], 9.7; 95% confidence interval [CI], 2.7-35.3; 12-month RR, 20.3; 95% CI, 4.1-99.2; $P < .01$ for both comparisons). Diastolic blood pressure was significantly lower at 12 months (RR, 2.9; 95% CI, 1.2-7.1; $P < .01$) but not at 6 months (RR, 1.0; 95% CI, 0.31-3.4; $P = .9$) for the cases compared with controls.

CONCLUSIONS: Patients who were referred to the pharmacist hypertension care management program had a significant improvement in most blood pressure outcomes. This program may be an effective method of improving blood pressure control among patients in a medical home model of primary care.

Published by Elsevier Inc. • The American Journal of Medicine (2015) 128, 539.e1-539.e6

KEYWORDS: Adherence; Care management; Disease management; Hypertension; Outcomes; Pharmaceutical Care; Pharmacy

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Funding: See last page of article.

Conflicts of Interest: See last page of article.

Authorship: See last page of article.

Presented in abstract, poster, and podium format at: the American College of Clinical Pharmacy Annual Meeting, Hollywood, Florida, October 20-24, 2012, and the VA Health Services Research and Development Annual Meeting, Washington, DC, July 16-19, 2012.

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0002-9343/$ -see front matter Published by Elsevier Inc.
http://dx.doi.org/10.1016/j.amjmed.2014.11.027

An interdisciplinary approach is a strategy that significantly and consistently improves blood pressure control.[1-5] Interdisciplinary teams typically include nonphysician providers, such as pharmacists and nurses, who focus on hypertension care. One meta-analysis on the potency of team care interventions found that interventions involving clinical pharmacists resulted in lower blood pressure and greater likelihood of achieving blood pressure control.[1] The potency of team care programs has been attributed not only to the specific intervention(s) used but also to the duration of the program, the type of organization, and the design of the trial to measure effectiveness of the program. In another systematic review on the effect of pharmacists as team members, Chisholm-Burns et al[6] found that pharmacist participation significantly improved outcomes for hypertension.

CLINICAL SIGNIFICANCE

- Systolic blood pressure was lower for cases compared with controls at 6 and 12 months (6-month risk ratio [RR], 9.7; 95% confidence interval [CI], 2.7-35.3; 12-month RR, 20.3; 95% CI, 4.1-99.2; $P < .01$).
- Diastolic blood pressure was lower at 12 months (RR, 2.9; 95% CI, 1.2-7.1; $P < .01$) but not at 6 months (RR, 1.0; 95% CI, 0.31-3.4; $P = .9$) for cases compared with controls.
- Pharmacist hypertension care management may be an effective method of improving blood pressure in a medical home model of primary care.

In the evolving patient-centered medical home model, the pharmacist's role as part of the interdisciplinary team has been described.[7] Within the patient-centered medical home, referral to a clinical pharmacist for hypertension management is associated with improved patient outcomes and provides primary care clinicians with additional time to focus on other patient priorities.[8] Adoption and implementation of a patient-centered medical home (or Patient-Aligned Care Team) model are ongoing at Veterans Affairs (VA) Medical Centers. The model establishes a group of practitioners, including physicians, nurses, pharmacists, social workers, and additional specialties, to partner with patients for a holistic and efficient primary care experience. This interdisciplinary model unites the healthcare team and improves outcomes by focusing on patient-centered care, but the effect of the pharmacist within the VA patient-aligned care team model is largely unknown. The purpose of the present study was to evaluate the effectiveness of pharmacists as part of the patient-aligned care team for veterans with hypertension.

MATERIALS AND METHODS

Study Setting

This study was conducted at an urban Midwest VA Medical Center that provides inpatient and outpatient health care services to approximately 200,000 veterans. Within primary care, services are provided across multiple clinics. Within each clinic, Patient-Aligned Care Team teamlets provide direct patient care; each teamlet consists of the patient, the clinician (usually a physician but in some cases an advanced practice nurse), the nurse case manager (Registered Nurse), and the health technician (Licensed Practical Nurse). Clinical pharmacists, social workers, health psychologists, and support staff are designated as members of several teamlets (and are shared across teamlets within a given clinic). For this study, a care management program was evaluated for patients with hypertension provided by clinical pharmacists in 4 primary care clinics and their associated Patient-Aligned Care Team teamlets.

Study Design

This was a retrospective case-control study using electronic medical record data to evaluate the effectiveness of the pharmacist care management program. The study was approved by the Indiana University/Purdue University-Indianapolis Institutional Review Boards and the VA Research and Development Committee.

Study Population

Patients with hypertension who were referred to the care management program during a 1-year evaluation were included as possible cases. Controls included patients with hypertension, in the same primary care clinics, who were not referred to the program during the same 1-year period. All patients were followed for 12 months.

Care Management Program

The hypertension care management program was provided by 6 clinical pharmacists within 4 primary care clinics throughout the duration of the evaluation period. Two clinics had 1 assigned pharmacist, and the other 2 clinics had 2 pharmacists because of the larger patient volume of those clinics. All pharmacists had completed a Doctor of Pharmacy program and at least 1 year of clinical pharmacy residency training. Several pharmacists had also obtained Board Certification in Pharmacotherapy. The pharmacists operated under a scope of practice allowing them to meet individually with patients, provide patient education, and initiate, change, and discontinue medications.

An electronic form was used by primary care providers to refer patients with hypertension to the pharmacists. During the referral process, many primary care providers would "curbside" the pharmacists to discuss initial therapy options. After referral to the program, patients were scheduled for an initial face-to-face visit with the pharmacist. Typically, the initial visit was scheduled to occur within 30 days of referral and occurred on the same day as the patient's regular primary care clinic visit. The pharmacists met with the