Journal of the American Society of Hypertension 5(6) (2011) 505–512

Research Article

The association between hypertension-specific care management processes and blood pressure outcomes in US-based physician organizations

Ken Wong, PharmD[a,*], Amy Smalarz, PhD[b], Ning Wu, PhD[b], Luke Boulanger, MA[b], and Jenifer Wogen, MS[c]

[a]*Novartis Pharmaceuticals Corporation, East Hanover, NJ;*
[b]*United BioSource Corporation, Lexington, MA; and*
[c]*MedMentis Consulting, LLC, Towaco, NJ*

Manuscript received June 24, 2011 and accepted August 3, 2011

Abstract

Care management processes (CMP) may be implemented in health systems to improve chronic disease quality of care. The objective of this study was to assess the relationship between the presence of hypertension-specific CMP and blood pressure (BP) control among hypertensive patients within selected physician organizations in the USA-modified version of the Physician Practice Connection Readiness Survey (PPC-RS), developed by The National Committee for Quality Assurance (NCQA), was administered to chief medical officers at 28 US-based physician organizations in 2010. Hypertension-specific survey items were added to the PPC-RS and focused on medication fill compliance, chronic disease management, and patient self-management. Demographic and clinical cross-sectional data from a random sample of 300 hypertensive patients age 18 years or older were collected at each site. Physician site and patient characteristics were reported. Regression models were used to assess the relationship between hypertension-specific physician practices and patient BP control. Eligible patients had at least a 1-year history of care with the physician organization and had an encounter within the past year of data collection. Of the 28 participating sites, most had electronic medical records that handle total functionality (71.4%) and had more than 50 staff members (78.6%). Across all sites, approximately 61% of patients had controlled BP. Regression analyses found that practices that used physician education as an effort to improve medication fill compliance demonstrated improvement in BP control (changes in systolic BP: beta coefficient = −1.366, $P = .034$; changes in diastolic BP: beta coefficient = −0.859, $P = .056$). The use of a systematic process to screen or assess patients for hypertension as a risk factor was also found to be associated with improvements in BP control (changes in diastolic BP: beta coefficient = −0.860, $P = .006$). In addition, physician practices that maintained a list of hypertensive patients along with the patients' associated clinical data demonstrated better BP control (currently controlled BP: beta coefficient = 0.282, $P = .034$; currently uncontrolled BP: beta coefficient = −0.292, $P = .023$). However, use of the following practices had a negative correlation with BP control: case management (changes in systolic BP: beta coefficient 1.649, $P = .022$; changes in diastolic BP: beta coefficient = 0.910, $P = .078$), follow-up for missed appointments (changes in systolic BP: beta coefficient = 0.937, $P = .041$; changes in diastolic BP: beta coefficient = 0.165, $P = .627$), adopted written evidence-based standards of care to treat hypertension (changes in systolic BP: beta coefficient = 0.985, $P = .032$; changes in diastolic BP: beta coefficient = 0.346, $P = .305$), and checklists for tests and interventions (changes in systolic BP: beta coefficient = 1.586, $P = .004$; changes in diastolic BP: beta coefficient = 0.938, $P = .019$). Findings from this multisite study provide evidence that the presence of some hypertension-specific CMP in physician organizations may be associated with better BP outcomes among hypertensive patients. In particular, patients may benefit from physician efforts to improve medication fill compliance as well as organizational monitoring of hypertensive patients and their clinical data. Further research is

Supported by funding from Novartis Pharmaceuticals Corporation.

*Corresponding author: Ken Wong, PharmD, Novartis Pharmaceuticals Corporation, One Health Plaza, East Hanover NJ 07936. Tel: (626) 282-2861.

E-mail: ken.wong@novartis.com

doi:10.1016/j.jash.2011.08.002

warranted to better assess the relationship between CMP and treatment of chronic diseases such as hypertension over time. J Am Soc Hypertens 2011;5(6):505–512.

Keywords: Hypertension; blood pressure control; care management processes; physician group.

Introduction

Hypertension affects approximately 65 million Americans and is the leading cause of cardiovascular disease (CVD) in the United States.[1] When ignored or treated poorly, hypertension can substantially increase the risk for CVD, especially when coupled with other risk factors such as obesity, smoking, high cholesterol, or diabetes.[2] More than two-thirds of hypertensive patients in the United States are treated for the condition,[3] but only 50% exhibit controlled blood pressure (BP) to the level recommended by the Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC 7).[4–6] Increased utilization of the electronic health record and patient empowerment may further promote implementation of the hypertension guideline, resulting in a higher rate of controlled BP.[7]

The need for improvements in health care has been highlighted in reports from the Institute of Medicine, particularly targeting chronic conditions as a high priority.[8–10] It is important to address quality improvement efforts in chronic conditions such as hypertension since they are highly associated with CVD.[11,12] Overall, consistent and sufficient care for chronic conditions is lacking, and research suggests that this inability to meet chronic care demands is a result of failing health care organizations as a whole, not individual physician practices themselves.

Within physician practices, structured processes of patient care, in addition to the sum total of all systems involved in the management and delivery of patient health care, are referred to as care management processes (CMP).[3] The chronic care model (CCM) is a conceptual framework used to organize and characterize these components of comprehensive care for chronic illnesses, which consists of six domains: health system organizations, delivery system redesign, decision support, clinical information systems, self-management support, and community resources and linkages.[6,8] The National Committee for Quality Assurance has developed a survey tool, Physician Practice Connections Readiness Survey (PPC-RS), to evaluate the use of these systems in physician organizations. In this study, the PPC-RS was amended with hypertension-specific survey items to assess the relationship between the presence of CMP for hypertension and BP control within select physician organizations in the United States. Currently, data are limited, perhaps because of lack of evidence-based quality measures of care processes for hypertension. Findings from this study could suggest which hypertension-related CMP components may be most effective when designing an intervention to improve quality of care or outcomes for patients with hypertension.

Methods

This cross-sectional study was conducted at 28 physician organizations across the United States. Participating sites were identified based on site interest and size (at least 20 primary care physicians practicing at the site). Forty-five sites were approached and 15 chose not to participate. Two sites were excluded due to difficulty in meeting the requirements within the given time frame. A modified version of the PPC-RS was administered to the chief medical officer (or equivalent) at each site to identify and measure CMP. Modifications to the survey involved the addition of 11 hypertension-specific questions, which were based on expert opinion obtained from an advisory board conducted before surveying the sites. One question focused on efforts to improve medication fill compliance, seven questions were related to chronic disease management, and three dealt with patient self-management (Table 1). The chief medical officer was directed to respond to all clinical related questions with respect to the treatment of patients with hypertension.

A random sample of 300 patients with hypertension age 18 years or older and meeting the inclusion criteria were selected for chart review from each participating site. Patients were considered eligible and were selected if they had a diagnosis of hypertension (ICD-9-CM 401.x, 402.xx, 403.xx, 404.x, or 405.xx, or written in doctor's notes) during a recent 1-year period, had at least 1 year history of care with the physician organization, and had an encounter with a primary care physician from the designated organization within the past year of data collection. Patients were excluded if they were pregnant or participated in a hypertension clinical trial within the past year.

Data elements collected from the chart review included patient demographic and clinical characteristics. Age, gender, and ethnicity variables were collected from each site, as well as body mass index and smoking status. A proxy for a comorbidity index was established via the number of chronic prescriptions (including hypertension medications) prescribed for each patient. Two BP measurements were collected, including the BP measures from the most recent visit and from the visit immediately preceding the most recent visit. Medication utilization variables included any hypertension-specific prescription medications taken at the time of the last BP measurement. Information on specific cardiovascular-related comorbidities was collected and included diabetes mellitus and dyslipidemia.

Study measures included the hypertension-specific questions and patient BP outcomes. Each hypertension-specific item of the survey was coded as present or not present; the score was calculated as the percentage present out of the