

# Patient Characteristics Predicting the Frequency of Medication Therapy Management Visits for Patients With Diabetes

Ahmed M. Soliman, MS<sup>1</sup>; Angeline M. Carlson, PhD<sup>2</sup>; Richard F. MacLehose, PhD<sup>3</sup>; Amanda R. Brummel, PharmD<sup>4</sup>; and Jon C. Schommer, PhD<sup>1</sup>

<sup>1</sup>Department of Pharmaceutical Care and Health Systems, College of Pharmacy, University of Minnesota, Minneapolis, Minnesota; <sup>2</sup>Data Intelligence Consultants LLC, Eden Prairie, Minnesota; <sup>3</sup>Department of Epidemiology and Community Health and Department of Biostatistics, University of Minnesota, Minneapolis, Minnesota; and <sup>4</sup>Fairview Pharmacy Services, LLC, Minneapolis, Minnesota

## ABSTRACT

**Background:** Patient characteristics associated with a higher exposure to medication therapy management (MTM) and the relationship between frequency of MTM visits and meeting clinically defined goals of therapy have not been documented.

**Objective:** The goal of this study was to evaluate factors predicting frequency of MTM visits for patients with diabetes and the impact of these visits on diabetes clinical outcomes.

**Methods:** All patients with diabetes participating in a 2007 MTM demonstration project (N = 121) were included in the analysis. A negative binomial regression controlling for age, sex, presence of diabetes complications, taking insulin, Charlson score Index, and hypertension and cholesterol medication regimen composition was used to assess predictors of the number of MTM visits. Optimal diabetes management differences between the 2 groups defined according to median number of MTM visits (low frequency,  $\leq 4$ ; high frequency,  $> 4$ ) was compared by using Wilcoxon Mann-Whitney and  $\chi^2$  tests.

**Results:** Having diabetes complications (relative risk = 2.83 [95% CI, 1.3–6.17];  $P = 0.0088$ ) and taking insulin (relative risk = 1.43 [95% CI, 1.12–1.83];  $P = 0.0038$ ) were associated with a higher number of MTM visits. At baseline, the high-frequency group had a significantly higher proportion of patients with insulin therapy ( $P < 0.01$ ), higher proportion with diabetes complications ( $P = 0.07$ ), and higher mean Charlson score ( $P = 0.08$ ). The rate of optimal diabetes care was significantly lower in the high-frequency group before MTM ( $P = 0.02$ ) but not statistically different from the low-frequency group during and 1 year after the demonstration project.

**Conclusions:** Patients with diabetes complications and using regimens that include insulin received more frequent MTM visits. MTM services delivered to a diabetes population with more complex disease or taking insulin have a positive impact on optimal diabetes care. (*Clin Ther.* 2013;35:534–540) © 2013 Elsevier HS Journals, Inc. All rights reserved.

**Key words:** Medication therapy management, diabetes, frequency of visits, optimal diabetes care.

## INTRODUCTION

Medication therapy management (MTM) is a pharmacist-led professional service aimed at reducing drug-associated adverse events, improving patient medication adherence, and increasing patient understanding of their diseases and prescribed drugs.

During MTM visits, the pharmacist assesses the patient's drug-related needs to ensure proper indication and optimum effectiveness, safety, and convenience. A patient-specific care plan is developed, together with scheduled follow-ups. MTM was officially recognized in the Medicare Prescription Drug, Improvement, and Modernization Act of 2003 (Pub L No. 108–173, 117 Stat 2066) approved by Congress. This act added a prescription drug benefit via Medicare Part D that is administered by insurers.<sup>1</sup> Insurers are required to offer MTM to a defined subset of beneficiaries whose care is expected to be more complex, in terms of disease-state severity, comorbidities, or medication regimens, and therefore more likely to require assistance with their medications.

Accepted for publication February 27, 2013.  
<http://dx.doi.org/10.1016/j.clinthera.2013.02.026>  
 0149-2918/\$ - see front matter

© 2013 Elsevier HS Journals, Inc. All rights reserved.

Even before official recognition, various studies had evaluated the clinical and economic outcomes that resulted from a patient-centered MTM program in populations with chronic diseases. Over the years, evidence showed that pharmacists' involvement in managing therapeutic regimens for populations with chronic diseases such as diabetes,<sup>2</sup> hypertension,<sup>3</sup> heart failure,<sup>4,5</sup> and hypercholesterolemia<sup>6</sup> resulted in improved clinical outcomes.

However, patient characteristics associated with a higher frequency of MTM visits and the relationship between frequency of MTM visits and meeting clinically defined goals of therapy have not been documented. The main purpose of the current study was to examine the relationship between patient, drug-, and disease-related characteristics and the rate of receiving MTM services. In addition, the dose-response relationship between MTM visits and diabetes clinical outcomes has not been examined even though published research on similar programs (ie, disease management programs) have shown improved clinical outcomes and reduced hospital admission on exposure to more frequent encounters with health care providers.<sup>7</sup> Thus, the second objective was to investigate whether optimal diabetes management differed between patients exposed to varying frequencies of MTM services.

## METHODS

The MTM program evaluated in the current study is a service of a large, Midwestern integrated health care system. The MTM program has used a standardized patient care process since its inception. The program invited patients with diabetes who attended 1 of the health care system outpatient clinics staffed with MTM pharmacists to participate in the program by scheduling an appointment with an MTM pharmacist. MTM was provided to patients through face-to-face consultations by using a process designed to identify and resolve drug therapy problems; this process has been described in-depth elsewhere.<sup>8</sup> MTM pharmacists' responsibilities included assessing the patients' medications, identifying drug-related needs, resolving and preventing drug-related problems, determining appropriate follow-up measures, and documenting intervention outcomes. Collaborative practice agreements between the health care system's physicians and MTM pharmacists allowed the MTM pharmacists to initiate, modify, or discontinue drug therapy and to order laboratory tests related to diabetes, hypertension, and hy-

perlipidemia. All MTM activities were documented by using a commercially available software program (Assurance, Medication Management Systems, Inc, Eden Prairie, Minnesota).

The number of MTM visits was obtained from Assurance records and were used both as a continuous and a dichotomous variable in analyses. Dichotomization required establishment of a cutoff at the median number of visits of the underlying population. Baseline variables (including age, sex, proportion of patients having diabetes complications, and the presence of comorbidities according to the Charlson score index<sup>9</sup>) were identified from electronic medical records. The Charlson score Index is a measure of comorbidity that assigns each medical condition a weight to reflect the risk of mortality; those weights are summed to compute the final score (higher scores indicate higher comorbidity burden).

To reflect differences in medication regimens, 3 additional variables were constructed from the medical records: for diabetes medications, a binary variable was constructed to indicate whether insulin was part of the diabetes medication regimen; for hypertension, a 3-level categorical variable (whether the patient used angiotensin-converting enzyme inhibitors/angiotensin receptor blockers in addition to other hypertensive medications, had angiotensin-converting enzyme inhibitor/angiotensin receptor blocker only, or did not have any hypertensive medication) was constructed; for hypercholesterolemia, a 3-level categorical variable (whether the patient was taking statins in addition to other hypercholesterolemia medications, had statin only, or did not have any medication from that therapeutic class) was constructed. The primary analysis evaluated the predictors of number of annual MTM visits as a continuous count variable by using a negative binomial multivariate regression to account for overdispersion.<sup>10</sup> The model controlled for age, sex, Charlson scores, using insulin as part of the diabetic medication regimen, and hypercholesterolemia and hypertension medication regimen composition. The Charlson score Index is a measure of the level of comorbidity in which each medical condition (17 different conditions) is assigned a weight depending on the risk of mortality from that specific condition. Those weights are summed to arrive at a total Charlson score index where a higher score indicates more comorbidity burden.

Download English Version:

<https://daneshyari.com/en/article/5825696>

Download Persian Version:

<https://daneshyari.com/article/5825696>

[Daneshyari.com](https://daneshyari.com)