

# Adherence and persistence associated with an appointment-based medication synchronization program

David A. Holdford and Timothy J. Inocencio

## Abstract

**Objective:** To assess the impact of an appointment-based medication synchronization (ABMS) program on medication adherence and persistence with chronic medications.

**Design:** Quasiexperimental study in which study patients were matched with control patients.

**Setting:** Rural pharmacies in the Midwestern United States between June 30, 2011, and October 31, 2012.

**Patients:** Individuals receiving at least two refills for one of six categories of medications to treat chronic diseases (i.e., angiotensin-converting enzyme inhibitors or angiotensin receptor blockers, beta blockers, dihydropyridine calcium channel blockers, thiazide diuretics, metformin, statins).

**Intervention:** Patients in the ABMS program were compared with control patients receiving usual care.

**Main outcome measures:** 1-year adherence rates using proportion of days covered (PDC) and 1-year nonpersistence rates.

**Results:** Depending on the drug class, patients enrolled in the medication synchronization program (n = 47–81) had adherence rates of 66.1% to 75.5% during 1 year versus 37.0% to 40.8% among control patients. Program patients had 3.4 to 6.1 times greater odds of adherence compared with control patients. Control patients were 52% to 73% more likely to stop taking their chronic medications over 1 year.

**Conclusion:** An ABMS program in community pharmacies was associated with improved patient adherence and reduced likelihood of nonpersistence.

**Keywords:** Community pharmacy services, medication adherence, chronic disease, pharmacies

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**M**edications are valuable in preventing and treating chronic medical conditions, but their effectiveness in the community is limited by patient nonadherence and nonpersistence with recommended therapeutic plans. Nonadherence can lead to serious consequences, resulting in considerable morbidity, hospitalizations, and mortality.<sup>1-3</sup> Estimates indicate that nonadherence costs the U.S. health care system \$100 billion<sup>4</sup> to \$289 billion<sup>5</sup> annually.

Adherence to physician prescriptions varies depending on the intervention, setting, patient population, and study, but evidence consistently indicates that adherence needs to be improved. A 50-year review of all physician medication and nonmedication therapies found that patients follow physician recommendations only 25% of the time.<sup>6</sup> For chronic medication prescriptions, studies have found adherence rates to vary widely, with most assessments reporting approximately 50% adherence.<sup>4,7-10</sup>

The reasons why patients do not take their medications are complex and varied. The World Health Organization classifies the causes for medication nonadherence into five categories.<sup>11</sup> The first category of causes refers to individual characteristics of the patient such as physical impairments (e.g., vision or dexterity problems), cogni-

tive problems, and age-related concerns. The second addresses difficulties associated with the patient's medical condition (e.g., asymptomatic) and comorbidities (e.g., depression). Third is the health system itself, and it includes causes such as poor continuity of care, lack of health care access, and poor provider-patient communications. Fourth is the complexity of therapeutic regimens and the various associated adverse effects. Last are socioeconomic causes, including affordability barriers, low reading literacy, low health literacy, and lack of social support for individuals.

Each patient's nonadherence typically is the result of multiple interrelated causes.<sup>11-13</sup> Resolution of these interrelated factors is needed for improvement to occur. In addition, the causes of nonadherence continually change for each patient as their medical conditions progress, new therapies are added to the regimen, socioeconomic situations change, and other circumstances arise. This suggests a need for interventions that can be continuously modified as the situation changes.

Because of the multifactorial nature of medication nonadherence, the most effective interventions typically are individualized to the unique needs of patients. Successful interventions combine diverse strategies that enhance patient access and convenience to medications, offer education and reminders, provide self-monitoring and feedback, engage in mutual problem solving, and offer a range of other approaches.<sup>11-13</sup> Community pharmacists have been offering variations of these approaches to their patients for many years.<sup>14-16</sup>

Indeed, a systematic review of the adherence literature found that five of six pharmacist-directed interventions in community pharmacies were effective in improving adherence by 7% to 27%.<sup>14</sup> Compared with other approaches, interventions delivered by pharmacists in a pharmacy were 83% successful compared with electronic interventions without a human involved (67%), phone calls (38%), and clinic programs (38%). When supported by electronic messaging or phone calls, additional evidence of the impact of face-to-face pharmacist services on improving medication adherence has been promising.<sup>15,16</sup>

The complexity of a patient's therapy influences medication adherence,<sup>17,18</sup> and it has been suggested that standardizing medication schedules can improve medication adherence and health outcomes.<sup>19-22</sup> Consequently, several programs that simplify patient medication regimens currently are being offered in community pharmacies. Known by various names (e.g., Patient Centric Model, Med Sync, Sync Your Meds), the programs involve pharmacists working with patients to synchronize their chronic refill medications to come due on a single day of the month. By streamlining the refill process and by working together to resolve medication-related issues, it is hypothesized that patients will have better adherence with their prescribed medications.

### At a Glance

**Synopsis:** This study described how patient adherence and persistence with chronic medications can be improved by allowing patients to meet with a pharmacist to solve medication-related problems and synchronize prescriptions to be dispensed on a single day of the month. Compared with control patients, those in the appointment-based medication synchronization (ABMS) group had 3.4 to 6.1 times greater odds of adherence compared with control patients. Control patients were 52% to 73% more likely to stop taking their chronic medications over 1 year.

**Analysis:** Although medication synchronization can help remind patients, provide updates on their progress, simplify the process, and make refilling a prescription more convenient, the monthly appointment allows pharmacists to educate, engage, and solve problems. In contrast to the typical prescription-filling process, during which pharmacists react to patients' needs, the ABMS program allows pharmacists to proactively manage patients' medication-related needs. The appointment provides an opportunity for pharmacists and patients to engage in mutual problem solving about issues such as physical impairments, lack of affordability, low literacy, and lack of social support. In addition, synchronization can free pharmacists to provide medication therapy management and additional clinical services.

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