

A Novel Pharmaceutical Care Model for High-Risk Patients

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A medication optimization clinic improved patient adherence, disease outcomes, and communication among health care providers at an Indian Health Service facility.

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Nonadherence is a significant problem that has a negative impact on both patients and public health. Patients with multiple diseases often have complicated medication regimens, which can be difficult for them to manage. Unfortunately, nonadherence in these high-risk patients can have drastic consequences, including disease progression, hospitalization, and death, resulting in billions of dollars in unnecessary costs nationwide.^{1,2} The Wheel Model of Pharmaceutical Care (Figure) is a novel care model developed at the Gallup Indian Medical Center (GIMC) in New Mexico to address these problems by positioning pharmacy as a proactive service. The Wheel Model of Pharmaceutical Care was designed to improve adherence and patient outcomes and to encourage communication among the patient, pharmacists, prescribers, and other health care team members.

Pharmacists are central to managing patients' medication therapies and coordinating communication among the health care providers (HCPs).^{1,3} Medication therapy management (MTM), a required component of Medicare Part D plans, helps ensure appropriate drug use and reduce the risk of adverse events.³ Since pharmacists receive prescriptions from all of the patient's HCPs, patients may see pharmacists more often than they see any other HCP. GIMC is currently piloting a new clinic, the Medication Optimization, Synchronization, and Adherence Improvement Clinic (MOSAIC), that was created to implement the Wheel Model of Pharmaceutical Care. MOSAIC aims to provide proactive pharmacy services and continuous MTM to high-risk patients and will enable the effectiveness of this new pharmaceutical care model to be assessed.

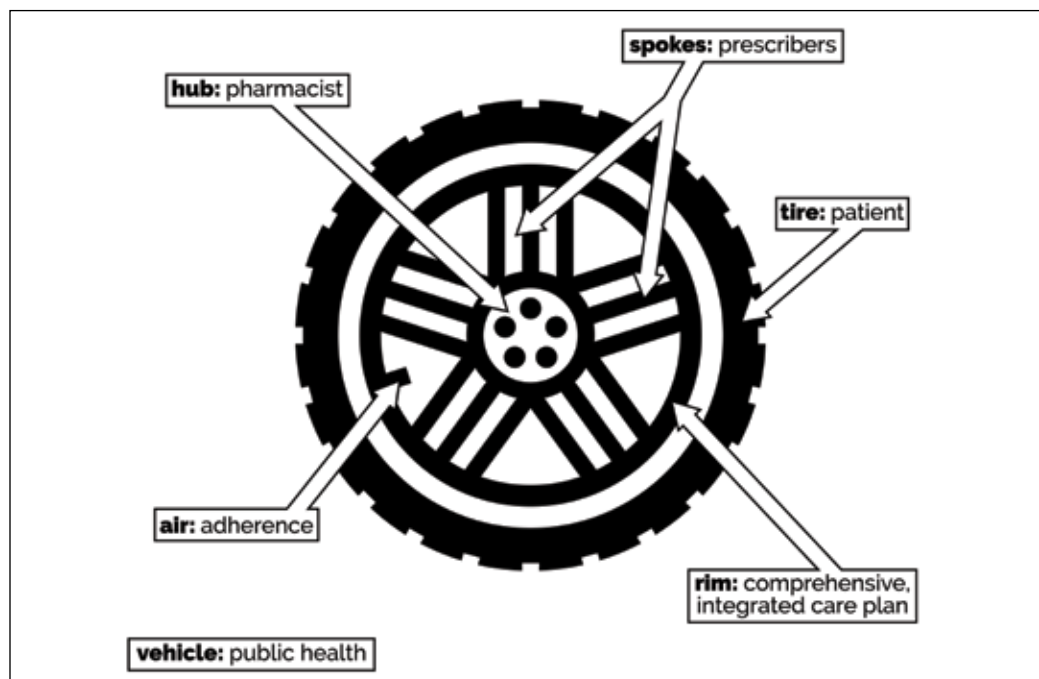
METHODS

Studies have identified certain populations who are at an increased risk for nonadherence: the elderly, patients with complex or extensive medication regimens, patients with multiple chronic medical conditions, substance misusers, certain ethnicities, patients of lower socioeconomic status, patients with limited literacy, and the homeless.^{2,4} Federal regulations require that Medicare Part D plans target beneficiaries who meet specific criteria for MTM programs. Under these rules, plans must target beneficiaries with ≥ 3 chronic diseases and ≥ 8 chronic medications, although plans also may include patients with fewer medications and diseases.³ Although the Wheel Model of Pharmaceutical Care is postulated to be an accurate model for the ideal care of all patients, initial implementation should be targeted toward populations who are likely to benefit the most from intervention. For these reasons, elderly Native American patients who have ≥ 2 chronic diseases and who take ≥ 5 chronic medications were targeted for initial enrollment in MOSAIC at GIMC.

Overview

In MOSAIC, pharmacists act as the *hub* of the pharmaceutical care wheel. Pharmacists work to ensure optimization of the patient's comprehensive, integrated care plan—the *rim* of the wheel. As a part of this optimization process, MOSAIC pharmacists facilitate synchronization of the patient's prescriptions to a monthly or quarterly target fill date. The patient's current medication therapy is organized, and pharmacists track which medications are due to be filled instead of depending on the patient to request each

FIGURE The Wheel Model of Pharmaceutical Care



The patient is represented by the tire. Each spoke represents the patient's prescribers: the family doctor, cardiologist, etc. The spokes support the rim, or the comprehensive, integrated care plan for all of the patient's diseases. The hub of the wheel, which is connected to each spoke, represents the patient's pharmacist. All of the patient's prescriptions from each prescriber are received by the pharmacist, who performs a prospective drug review and is responsible for ensuring that the patient's regimen is optimal. As the hub of the patient care team, the pharmacist should ensure that there is ample communication among all providers to prevent missing, duplicate, or inappropriate therapies. Adherence is represented by the air in the tire: Without routine monitoring, a leak could develop, preventing even the best care plan from working. A properly inflated and aligned wheel will ensure maximum life of the tire and smooth operation of the larger vehicle that is public health.

prescription refill. This process effectively changes pharmacy from a requested service to a provided service.

Pharmacists also monitor the *air* in the tire to promote adherence. This is accomplished by providing efficient monthly or quarterly telephone or in-person consultations, which helps the patient better understand his or her comprehensive, integrated care plan. MOSAIC eliminates the possibility of nonadherence due to running out of refills. Specialized packaging, such as pill boxes or blister packs, can also improve adherence for certain patients.

MOSAIC ensures that pharmacists stay connected with the *spokes*, which represent a patient's numerous prescribers, and close communication loops. Pharmacists can make prescribers aware of potential gaps or overlaps in treatment and assist them in the optimization and development of the patient's comprehensive, integrated care plan. Pharmacists also make sure that

the patient's medication profile is current and accurate in the electronic health record (EHR). Any pertinent information discovered during MOSAIC encounters, such as abnormal laboratory results or changes in medications or disease, is documented in an EHR note. The patient's prescribers are made aware of this information by tagging them as additional signers to the note in the EHR.

Keeping patients—the *tires*—healthy will ensure smooth operation of the *vehicle* and have a positive impact on public health. MOSAIC is expected to not only improve individual patient outcomes, but also decrease health care costs for patients and society due to nonadherence, suboptimal regimens, stockpiled home medications, and preventable hospital admissions.

Traditionally, pharmacy has been a requested service: A patient requests each of their prescriptions to be refilled, and the pharmacy fills the prescription. Ideally,

pharmacy must become a provided service, with pharmacists keeping track of when a patient's medications are due to be filled and actively looking for medication therapy optimization opportunities. This is accomplished by synchronizing the patient's medications to the same monthly or quarterly fill date; screening for any potentially inappropriate medications, including high-risk medications in elderly patients, duplications, and omissions; verifying any medication changes with the patient each fill; and then providing all needed medications to the patient at a scheduled time.

To facilitate this process, custom software was developed for MOSAIC. In addition, a collaborative practice agreement (CPA) was drafted that allowed MOSAIC pharmacists to make certain medication therapy optimizations on behalf of the patient's primary care provider. As part of this CPA, pharmacists also may order and act on certain laboratory tests, which helps to monitor disease progression, ensure safe medication use, and meet Government Performance and Results Act (GPRA) measures. As a novel model of pharmaceutical care, the effects of this approach are not yet known; however, research suggests that increased communication among HCPs and patient-centered approaches to care are beneficial to patient outcomes, adherence, and public health.^{1,5}

Investigated Outcomes

As patients continue to enroll in MOSAIC, the effectiveness of the clinic will be evaluated. Specifically, quality of life, patient and HCP satisfaction with the program, adherence metrics, hospitalization rates, and all-cause mortality will be assessed for patients enrolled in MOSAIC as well as similar patients who are not enrolled in MOSAIC. Also, pharmacists will log all recommended medication therapy interventions so that the optimization component of MOSAIC may be quantified. GPRA measures and the financial implications of the interventions made by MOSAIC will also be evaluated.

DISCUSSION

There are a number of factors, such as MTM services and interprofessional care teams,

that research has shown to independently improve patient outcomes, adherence, or public health. By synthesizing these factors, a completely new approach—the Wheel Model of Pharmaceutical Care—was developed. This model presents a radical departure from traditional, requested-service practices and posits pharmacy as a provided service instead. Although the ideas of MTM and interprofessional care teams are not new, there has never been a practical way to truly integrate community pharmacists into the patient care team or to ensure adequate communication among all of the patient's HCPs. The Wheel Model of Pharmaceutical Care includes public health as one of its core components and provides a framework for pharmacies to meaningfully impact health outcomes for patients.

The Wheel Model of Pharmaceutical Care was designed to minimize the likelihood of nonadherence. Despite this, patients might willfully choose to be nonadherent, forget to take their medications, or neglect to pick up their medications. Additionally, in health care systems where patients must pay for their medications, prescription drug costs might be a barrier to adherence.

When nonadherence is suspected, the Wheel Model of Pharmaceutical Care directs pharmacists in MOSAIC to take action. First, the underlying cause of the nonadherence must be determined. For example, if a patient is nonadherent because of an adverse drug reaction, a therapy change may be indicated. If a patient is nonadherent due to apathy toward their health or therapy, the patient may benefit from education about their condition and treatment options; thus, the patient can make shared, informed decisions and feel more actively involved with his or her health. If a patient is nonadherent due to forgetfulness, adherence packaging dispense methods should be considered as an alternative to traditional vials. Depending on the services offered by a given pharmacy, adherence packaging options may include blister packs, pill boxes, or strips prepared by robotic dispensing systems. The use of medication reminders, whether in the form of a smartphone application or a simple alarm clock, should be discussed with the patient. If the patient does not pick up

their medications on time, a pharmacist can contact the patient to determine why the medications were not picked up and to assess any nonadherence. In this case, mail order pharmacy services, if available, should be offered to patients as a more convenient option.

The medication regimen optimization component of MOSAIC helps reduce the workload of primary care providers and allows pharmacists to act autonomously based on clinical judgment, within the scope of the CPA. This can prevent delays in care caused by no refills remaining on a prescription. The laboratory monitoring component allows pharmacists to track diseases and take action if necessary, which should have a favorable impact on GPRA measures. Medication optimizations can reduce wasted resources by identifying cost-saving formulary alternatives, potentially inappropriate medications, and suboptimal doses.

Since many Indian Health Service beneficiaries do not have private insurance and therefore do not generate third-party reimbursements for services and care provided by GIMC, keeping patients healthy and out of the hospital is a top priority. As more patients are enrolled in MOSAIC, the program is expected to have a favorable impact on pharmacy workload and workflow as well. Prescriptions are anticipated and filled in advance, which decreases the amount of patients calling and presenting to the pharmacy for same-day refill requests. Scheduling when MOSAIC patients' medications are to be filled

and dispensed creates a predictable workload that allows the pharmacy staff to be managed more efficiently.

CONCLUSION

Adherence is the responsibility of the patient, but the Wheel Model of Pharmaceutical Care aims to provide pharmacists with a framework to monitor and encourage adherence in their patients. By taking this patient-centered approach, MOSAIC is expected to improve outcomes and decrease hospitalizations for high-risk patients who simply need a little extra help with their medications.

Author disclosures

The author reports no actual or potential conflicts of interest with regard to this article.

Disclaimer

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