Partnering With Pharmacists to Reduce Cardiovascular Risk in Outpatient Settings

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Cardiovascular disease (CVD) is highly prevalent, affecting >4 in 10 Americans, and its costs are expected to exceed $1.1 trillion by 2035.[1] Great strides have been made in reducing cardiovascular-related mortality over the past half-century, but those trends have stagnated in recent years, and CVD remains the leading cause of death in the United States and many other developed countries. Public health initiatives to prevent CVD have focused on myriad strategies, including promoting public awareness and implementing community-wide programs.[2,3] A particularly promising clinical strategy is team-based care. Although the concept of team-based care has existed for quite some time, there has been renewed interest in the United States as a result of various factors, including value-based healthcare reform and Medicaid expansion, increasing strains on the primary care system, greater focus on advanced clinical training for allied health professionals, and growing evidence highlighting the efficacy of team-based care.[4,5] Within these team-based care models, pharmacists play an essential role as medication experts who improve the quality of care through optimization of pharmacotherapy.[6] Several well-conducted randomized controlled trials have documented benefits of pharmacist-led interventions within a team-based setting; however, most prior studies have focused on a single disease state.[7,8]

In this issue of the *Journal of the American Heart Association (JAHA)*, Martinez-Mardones and colleagues report a systematic review and meta-analysis evaluating whether pharmacist-led medication reviews reduce CVD risk factors among adults with hypertension, type 2 diabetes mellitus, or dyslipidemia.[9] The authors included 69 randomized controlled trials comparing pharmacist-led medication reviews with usual care. A total of 11 644 patients were included in the meta-analysis, of whom 57% were women, with a mean age of 60 years. The investigators categorized medication review interventions in each study into 1 of 3 types, using definitions established by the Pharmaceutical Care Network Europe (PCNE) and based on the level of information available to the pharmacist during review (Table). Compared with usual care, pharmacist-led interventions improved control of blood pressure (31 studies [n=7031]; odds ratio [OR]: 2.73; 95% prediction interval [PI], 1.05–7.08), hemoglobin A1c (12 studies [n=1805]; OR: 3.11; 95% PI, 1.48–6.52), and total cholesterol (11 studies [n=2012]; OR: 1.91; 95% PI, 1.05–3.46). The authors also stratified analyses by pharmacist setting (ambulatory clinics versus community pharmacies) and found no apparent differences, although these analyses were limited by comparatively small sample sizes in the community pharmacy studies, particularly in studies of diabetes mellitus or cholesterol interventions. All included studies were classified as testing intermediate (type 2a or 2b) or advanced (type 3) medication reviews, with the latter associated with better outcomes, at least for continuous measures.

Importantly, these findings are broadly consistent with prior studies documenting that pharmacist involvement in the multidisciplinary healthcare team improves health outcomes, reduces healthcare costs, and increases patient satisfaction.[10,11] Unfortunately, many of the included trials provided unclear or varying descriptions of the interventions. Moreover, some pharmacist interventions in these studies did not fit wholly into the PCNE definitions for "medication reviews"—that is, the medication review was often only one part of a larger pharmacist intervention that may also include educational components, adherence interventions, or therapy adjustments under collaborative practice agreements. The authors attempted to identify whether individual components of the intervention, such as the provision of disease education, had an effect on the outcomes. Two factors seemed to be associated with greater reductions in continuous

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Table. Description of MR Types, Associated Information Requirements, and Summary of Where Each Type Is Performed Based on Pharmacist Settings

PCNE MR Type	Information Needed for MR	Routinely Performed MR in United States		
		Outpatient Pharmacists	Clinic-Embedded Pharmacists	Centralized Clinical Pharmacy Services
1 (Simple)	Pharmacy dispensing data only	Yes	No	Yes*
2a (Intermediate)	Pharmacy dispensing data and patient-supplied information	Yes	Yes†	Yes*
2b (Intermediate)	Pharmacy dispensing data and medical records	No	Yes†	Yes*
3 (Advanced)	Pharmacy dispensing data, patient-supplied information, and medical records	No	Yes†	Yes*

MR indicates medication review; PCNE, Pharmaceutical Care Network Europe.

*Dispensing records typically available only to pharmacists practicing in vertically integrated health systems; prototypical examples are the Kaiser Permanente Colorado Clinical Pharmacy Cardiac Risk Service and Veterans Affairs health systems.

†Clinic-embedded pharmacists rarely have access to dispensing records (except in some vertically integrated systems) but do have access to prescription records originating from the clinic/health system.

measures of disease control: the level of the medication review (type 3 more than type 2) and, for blood pressure outcomes, whether the pharmacist measured blood pressure. Given the heterogeneity of these studies, interpretation of these subgroup analyses is difficult. Consequently, although this study strongly supports pharmacist-driven improvements in major cardiovascular risk factors, it remains unclear exactly what components of these medication reviews or other parts of the interventions are most effective.

Martinez-Mardones and colleagues' focus on pharmacists embedded in clinics or retail pharmacies is relevant to US-based practice because the vast majority of US pharmacists perform medication reviews and related outpatient services in one of these settings. How best to engage pharmacists in direct patient-care roles remains an open question. Pharmacists embedded in the ambulatory clinic setting typically manage medication therapy within a primary care or specialty clinic under the supervision of a physician, often as part of a broader multidisciplinary team. In the United States, almost all states and the District of Columbia now include a legislative framework for collaborative practice agreements, although implementation of these collaborative practices vary widely, and pharmacists' roles depend largely on the type of formal or informal collaborative practice agreement established with the providers. In general, however, these roles may include measuring and assessing vital signs, reviewing and ordering laboratory parameters, screening for medication-related problems, providing patient education, identifying barriers to adherence, and adjusting medication regimens.[11] Aside from the benefits observed by Martinez-Mardones et al[9] and in prior research,[10] services provided by clinic-embedded pharmacists may also improve healthcare utilization. Previous studies have shown that patients who are followed routinely by a pharmacist tend to have increased numbers of clinic visits and greater amounts of medications, often resulting in a corresponding greater level of disease control.[7,10]

Community pharmacies, in contrast, have traditionally been seen as a separate entity from the treatment team, focused on dispensing of prescription medications and providing patient education related to self-care conditions. Recent initiatives, however, have started to integrate community pharmacists as key members of the healthcare team. In addition to historical roles of dispensing medications and providing patient education, many pharmacies provide systematic medication therapy management services, point-of-care testing for various health screenings (eg, blood glucose, cholesterol), and wellness counseling to improve management of chronic diseases.[12,13] Medication synchronization services to improve adherence also fall within their purview.

Successful incorporation of pharmacists into a multidisciplinary healthcare team and optimization of the care they provide are not without challenges. As shown by the present meta-analysis,[9] most physician–pharmacist collaborative care models that have been studied exist within academic-affiliated or large healthcare systems. Smaller offices may encounter greater barriers to embedding pharmacists, including, most notably, costs associated with hiring and supporting pharmacists.[14] Even when this barrier can be overcome, other issues hinder optimization of pharmacist-led patient care: pharmacists embedded in clinics rarely have access to outpatient pharmacy records in any systematic fashion (Table). As many clinicians can attest, prescription records from a single clinic are often a poor proxy measure for actual medication regimens taken. Conversely, community pharmacists rarely have systematic access to clinical records. In both cases, lack of information sharing can result in unidentified or misidentified drug therapy problems, which, in turn, may result in patient harm or excess healthcare costs and create inefficiencies through duplication of services.

Taking these challenges into consideration, novel approaches may be necessary to optimally engage pharmacists in team-based care. Possible models for smaller clinics may include partnering with other clinics to share a

clinical pharmacist. In the case of rural primary care offices, utilization of a centralized, remote, clinical pharmacy service may be more feasible.[15,16] In such a model, contracts are established between the clinic and a centralized service to provide medical record access and to contact patients by telephone. Such models have been effective in vertically integrated health systems (eg, Kaiser Permanente Colorado) and in pilot studies in rural clinics;[16] larger implementation studies are also currently under way (ClinicalTrials.gov identifiers NCT02215408 and NCT03660631). Alternatively, community pharmacists remain some of the most accessible healthcare providers in the United States, and several models have been or are currently being investigated to engage community pharmacists in more substantive collaborative care. Small-scale models showing promise include collaborations between community pharmacies and nearby patient-centered medical home clinics to provide comprehensive medication reviews in the community pharmacy[17] or directly in the clinic.[18] Another model, in which community pharmacists were granted independent prescribing authority for antihypertensive medications, has been remarkably successful in Canada.[19] Regardless of the specific approach, successful models all include clearly delineated roles and responsibilities, clear communication and documentation protocols, and reciprocal information sharing.

The present study by Martinez-Mardones and colleagues adds to an increasingly robust literature documenting the benefits of including pharmacists in team-based care for patients with major modifiable cardiovascular risk factors. Although major guidelines have called for increased engagement of pharmacists in team-based care, additional research is needed to better understand optimal implementation of such models. In particular, work is needed to inform how best to engage community pharmacists, who remain a relatively untapped resource. In the meantime, existing resources, for example, from the Centers for Disease Control and Prevention, may be helpful for decision-makers seeking to develop team-based care models and engage pharmacists more fully in the care of their patients.[20]

Disclosures

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