Clinical Pharmacy Technicians: A Valuable Resource for Clinical Pharmacists

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Time spent on nonclinical activities can significantly hinder the efforts of pharmacists to enhance their clinical role. Here's how clinical pharmacy technicians can help.

The past two decades have been marked by tremendous advancement in the pharmacist's role as a member of the health care team. These advancements include the integration of pharmacists into direct medication therapy monitoring with patient assessment, adherence monitoring, medication therapy evaluation, and limited prescribing under defined scopes of practice. Although the value of pharmacists in expanded clinical roles has been well documented,[1–4] social, economic, and political barriers often have negated the utilization of qualified pharmacists in these roles. These barriers have included patient and provider acceptance; pharmacists' reluctance to change; pharmacist shortages; employee bargaining unit oversight; personnel budgetary limitations; regulatory limitations; and nonclinical, operationally based job duties.

Historically, clinical pharmacists at the Carl T. Hayden VA Medical Center in Phoenix, AZ have been well accepted as members of the ambulatory health care team. Nevertheless, excessive time spent on nonclinical activities significantly impeded the efforts of these pharmacists to further enhance their clinical role. This barrier was successfully addressed when specialized technicians were integrated into the ambulatory care pharmacy team—a move that enhanced the clinical role of the pharmacist, improved patient care, and increased physician satisfaction with clinical pharmacy services.

In this article, we'll discuss how we developed the clinical pharmacy technician program at the Carl T. Hayden VA Medical Center, the various roles these technicians have played within our medical center, and the impact it has had on the activities of clinical pharmacists. We'll also describe how we maintain and document the competency of pharmacy technicians and the potential we see for expanding their role in the future.

DEVELOPING THE PROGRAM

Carl T. Hayden VA Medical Center has a large ambulatory care ser-

Continued on page 25

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Continued from page 22

vices (ACS) program that serves four campuses and represents more than 500,000 provider visits annually. In fiscal year 2003, the ACS filled more than 1.75 million outpatient, 30-day equivalent prescriptions. The clinical pharmacy team within the ACS primary care department consists of 26 professionals, including clinical pharmacy specialists, clinical pharmacists, clinical support pharmacists, and clinical technicians. Major team activities include disease state management, medication counseling, patient assessment, medication use guideline development, medication profile and polypharmacy reviews, resident and student training, and participation in several multidisciplinary patient care committees.

In 1998, the clinical pharmacy team's goals focused on optimizing cost-effective care and patient safety by increasing opportunities for pharmacists to manage medication, particularly in the areas of providing drug information to patients and providers, assisting providers with disease state management, maximizing patient counseling, and training students and residents. Unfortunately, the team's staffing limitations and technical job assignments, combined with budgetary constraints and a rapidly increasing patient enrollment, made it difficult to achieve these goals.

At the time, it was estimated that more than 50% of clinical pharmacists' time was dedicated to medication order entry and other technical functions. Knowing that we could not expand the clinical role of the pharmacists without curtailing the assigned nonclinical responsibilities, we began to conceptualize and develop our clinical pharmacy technician program. As a basic template for our initial program, we used the program that had been implemented at the North Mississippi Medical Center, Tupelo and described in pharmaceutical literature.[5]

The development of our clinical technician program did not occur overnight. There were many stakeholders that needed to be involved in the development and implementation process—including ambulatory care clinical pharmacists, clinic physicians, clinic and pharmacy administration staff, the employee bargaining unit, the human resource department, and the technicians themselves. Program implementation became easier as the majority of stakeholders recognized the potential clinical and economic benefits of this new program and welcomed its development.

Although barriers were minimal, the team faced several significant hurdles related to technicians' knowledge and skills and institutional regulations. While all the technicians selected for the new positions had years of experience and good communication skills, specialized training was necessary for them to function optimally in their assigned areas. In addition, a position description had to be developed, approved, and graded. Finally, the initial job assignments had to be structured in such a way as to ensure continued pharmacist oversight, while circumventing the potential for professional territorialism.

The hurdles and barriers were overcome and the clinical technician program was implemented successfully. Our first two clinical pharmacy technicians were hired in 1998 to work in anticoagulation and ambulatory care, with one full-time equivalency assigned to each service.

TECHNICIANS IN ANTICOAGULATION MANAGEMENT

When our first clinical technicians were hired, our anticoagulation service was being centralized. A single pharmacist managed over 800 cases. The clinical technicians were instructed on the use of warfarin and its adverse effects and on the clerical tasks involved with an anticoagulation clinic. Once trained, the technicians were given responsibility for nearly all of the operational activities of the centralized anticoagulation clinic under the oversight of the clinical pharmacist. As hoped, reducing the operational activities of the clinical pharmacist allowed him to focus on direct patient care decisions and on communication with providers.

On a daily basis, the clinical technicians maintained patient records and generated international normalized ratio (INR) reports for review by the clinical pharmacist. After the clinical pharmacist performed the review and made recommendations, the technicians telephoned patients who required a dose modification and documented each interaction with an electronic progress note. During each patient contact, the technicians inquired about potential adverse effects, assessed patient adherence, and provided secondary patient education through the use of standardized questions. The technicians also sent letters to patients who missed clinic appointments or were delinquent in their laboratory monitoring. To ensure complete and accurate documentation, all technician notes were reviewed and cosigned by the clinical pharmacist (Figure 1).

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Continued from page 25

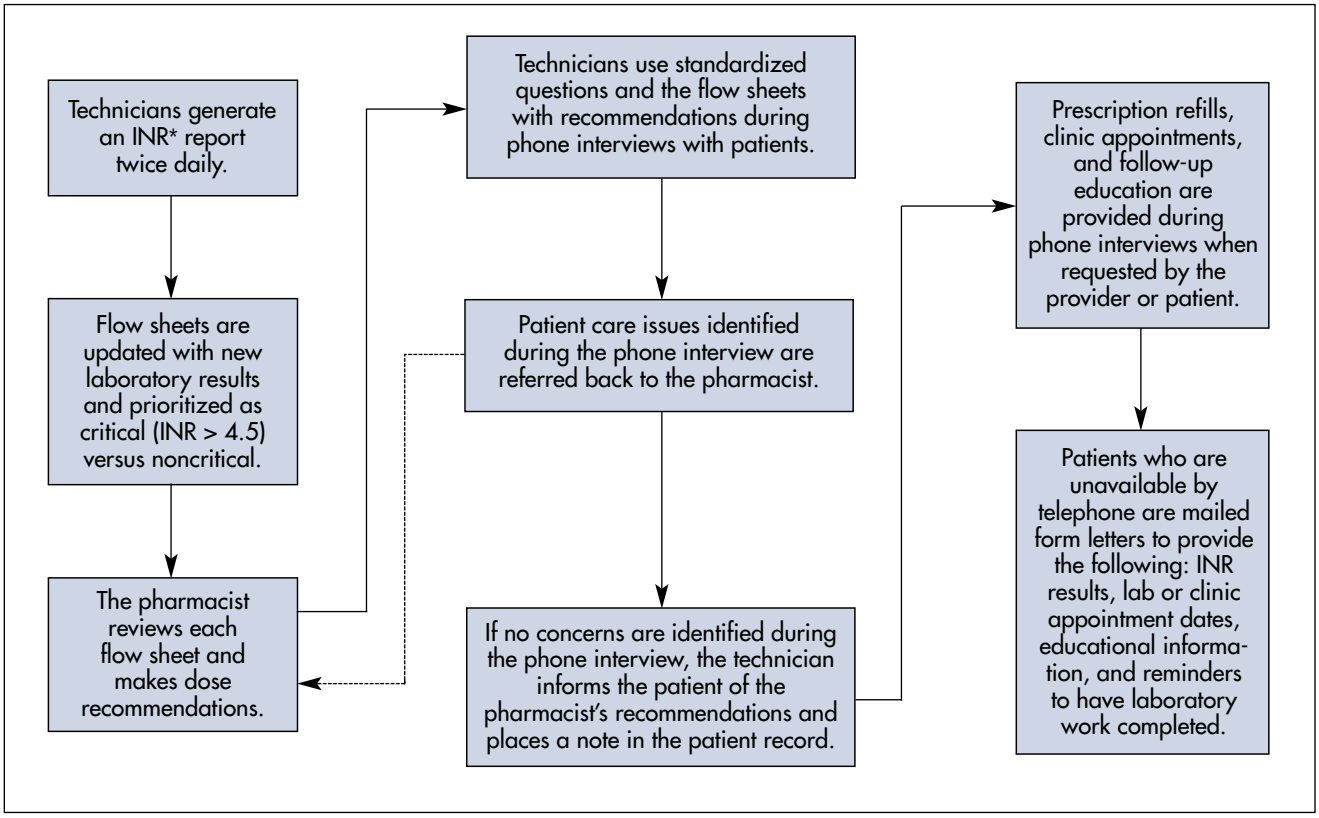

Figure 1. Anticoagulation clinic workflow diagram. *INR = international normalized ratio.

Due to the successful performance of the clinical technician and the growth in patient volume, a second clinical technician was assigned to the clinic in 2001 and an additional clinical pharmacist was added in 2002. (The number of patients presently enrolled in the clinic exceeds 2,300.)

Despite a high clinic workload, positive patient outcomes have been maintained and provider satisfaction has increased. A comparative evaluation conducted in 2002 found that INR results for clinic patients actually improved slightly with the use of technicians—from being within the therapeutic range 61% of the time to being there 63% of the time (Figure 2).

Clinical pharmacy technicians have been integral in optimizing the safe use of warfarin therapy. The following two cases highlight ways in which clinical technicians can intervene successfully to avoid potentially negative patient outcomes.

In the first case, a patient with a previously stable INR presented with a considerably subtherapeutic INR of 1. The patient reported no missed doses and no changes in diet or alcohol consumption. In the absence of other likely causes for rapid INR reduction, the patient was asked to read the imprint on the tablets in the warfarin vial. The technician identified the tablet as levothyroxine rather than warfarin. Further discussion revealed that these tablets appeared similar in size and color and that the patient had placed both medications in the same bottle. The patient was advised against mixing tablets. One week later, a repeat INR was therapeutic. No adverse outcome resulted from this patient's error.

In the second case, an increased INR in a previously stable patient taking warfarin prompted the clinical pharmacist to recommend a dose reduction. The technician's interview with the patient revealed that the patient's community physician recently had prescribed trimethoprim/sulfamethoxazole. The clinical pharmacist was notified and the technician advised the patient to contact his physician immediately to discuss alternate antibiotic options. Ultimately, the antibiotic was changed and the INR returned to the target level at the next evaluation.

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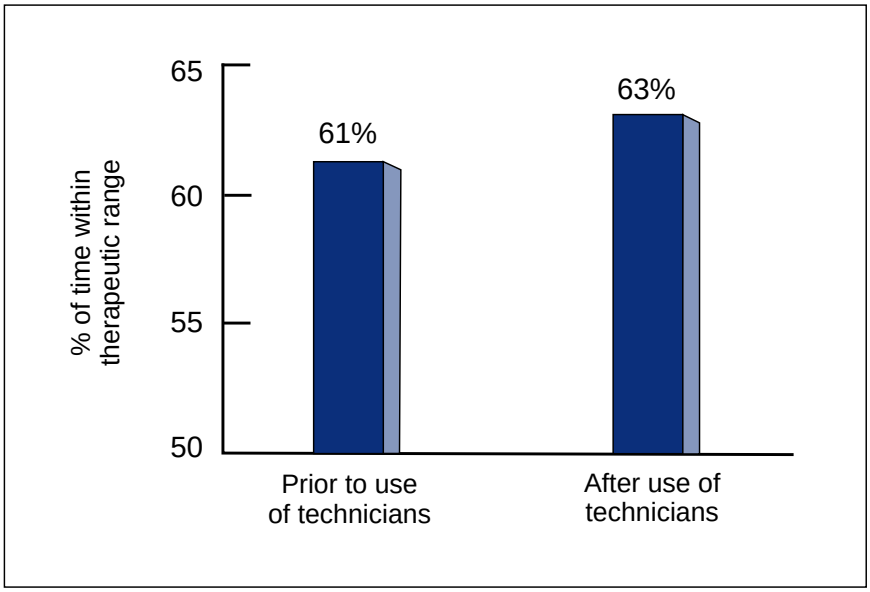

Figure 2. Comparison of results before and after the integration of clinical pharmacy technicians within the anticoagulation clinic.

PROVIDING SUPPORT IN AMBULATORY CARE

In ambulatory care, as in anticoagulation management, the support provided by clinical technicians is vital to team success. Clinical technicians assist the pharmacist in medication profile reviews and help assess patients for medication adherence and allergies. When a nonformulary medication is prescribed, the technician has been trained to review the prescription for compliance with published guidelines and criteria for use. When needed, technicians communicate with the particular prescriber or the clinical pharmacist to clarify the appropriateness of a given order. While clinical technicians frequently assist in collecting data related to a given medication request, the clinical pharmacist determines whether to approve or deny the medication order and communicates clinical recommendations to the prescribing provider.

The following two cases show how our clinical pharmacy technicians have intervened to prevent possible adverse drug reactions (ADRs) in the ambulatory care clinic.

In the first case, a prescription for trimethoprim/sulfamethoxazole was written for a patient with a documented sulfa allergy. (The drug would produce a severe rash.) The clinical technician verified the allergy with the patient and discussed the situation with the provider, who was unaware of the sulfa component in that particular combined drug formulation.

In the second case, a prescription for neutral protamine Hagedorn (NPH) insulin 120 U twice daily was written for a patient who was new to the VA. When the technician sought to verify this dose, the patient revealed that he had been taking NPH insulin 12 U twice daily prior to this visit. The clinical technician's subsequent discussion with the prescriber confirmed that there had been an ordering error. The prescription was rewritten and processed.

OTHER ROLES FOR THE TECHNICIAN

Some pharmacy staff members at our institution initiated a pilot project to determine the cost-effectiveness of using a clinical pharmacist/clinical pharmacy technician team in the primary care setting.[6] Various interventions performed by the clinical pharmacy team (such as discontinuing unnecessary medications, changing medications, changing medication doses, adding medications, and assessing patients for potential adverse drug events or drug interactions) were documented, along with the estimated cost savings and the time required. During an eight-week period, the clinical pharmacy technician was responsible for 62 interventions involving 44 patients. Overall results indicated that the interventions resulted in an annualized, medication-related cost savings in excess of $33,000 and improved patient care (Figure 3).

Clinical technicians serve as the first line of triage for patients with pharmacy requests. Whether contacted in the clinic or through our telephone-linked care program, technicians assist patients with logistic and operational pharmacy questions, while forwarding clinical questions to the appropriate clinical pharmacist.

When the manufacturer of our formulary nasal steroid abruptly discontinued medication production, one of our clinical technicians, under the auspices of the associate chief of staff of ambulatory care, coordinated a therapeutic substitution that had been authorized by

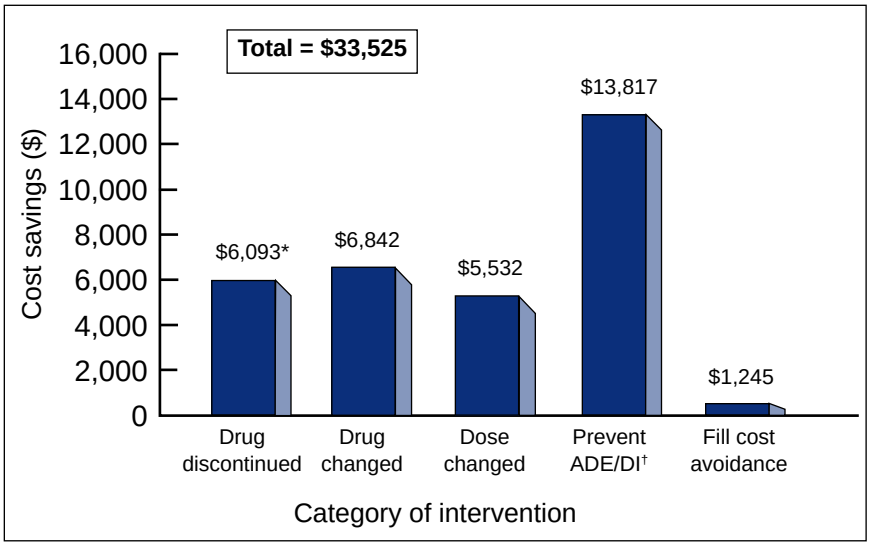

Figure 3. Annual estimated cost savings for interventions. *Cost of added medications (not shown, $457/year) deducted from initial cost savings on drugs discontinued ($6,550 – $457 = $6,093). †ADE = adverse drug event; DI = drug interaction.

the pharmacy and therapeutics committee. With each refill request for the unavailable product, the clinical technician entered a new prescription for the alternative product as a verbal order from the prescribing provider. A computerized progress note was then entered to document the conversion, and the provider and patient were contacted and advised of the medication change. This process proved highly efficient and successful, while minimizing pharmacist and provider workload.

In early 2002, at the request of a primary care physician director at our facility, a clinical technician opened a clinic to educate patients on the correct usage of a weekly medication box (an adherence aid with slots labeled for morning, noon, dinner, and bedtime each day). At their scheduled appointment, patients who demonstrate the ability to fill the box accurately and independently are discontinued from further follow-up. Patients who are unable to fill their own box despite instruction are scheduled for monthly appointments with the technician.

Historically, clinical pharmacists or registered nurses were charged with filling medication boxes monthly. Clinical technicians now provide this service at a fraction of the salary cost. Further plans are underway for technician-led instructional classes to help patients or caregivers to fill boxes accurately without the need for a unique clinic encounter or home visit.

In the smoking cessation clinic, the pharmacy department is responsible for assessing each patient, selecting appropriate drug therapy, providing counseling on drug therapy, and acquiring and dispensing the pharmaceutical. While the pharmacist is responsible for the clinical activities (counseling and drug selection during the first week's class), technicians oversee the weekly acquisition and distribution of the medication. Specific clinical questions at the weekly follow-up visits are referred to clinical pharmacists.

Clinical technicians are also responsible for monthly clinic inspections. They evaluate current stock, identifying any mislabeled, outdated, or inappropriate medications in medication rooms and crash carts. When indicated, the technicians remove or replace medications. Technicians document all findings and activities monthly. Inspection compliance rates have improved dramatically since the clinical technician team assumed this responsibility.

Our institution also has created criteria for guidelines regarding the use of cholinesterase inhibitors in the treatment of Alzheimer's dementia. These guidelines mandate baseline and interval Mini-Mental State Examination (MMSE) and activities of daily living (ADL) testing. After training by a representative of the neurology department, clinical technicians administer follow-up MMSE/ADL tests and document the results in the electronic medical record, which is cosigned by the appropriate prescriber.

HOW DO WE ENSURE ONGOING COMPETENCY?

To maintain and document clinical technician competency, clinical pharmacists give bimonthly presentations on topics selected by the technician team. In the past, topics have included diabetes, laboratory values and interpretation, osteoporosis, hypertension, anticoagulation, reflux disease, and pharmacy law. Competency is assessed through written examination following each lecture. Continuing education credits toward institutional and Certified Pharmacy Technician recertification are provided based

on successful completion. In addition, clinical technicians are evaluated routinely by their supervising pharmacists, and are encouraged to participate in all clinical pharmacy educational and competency programs.

IMPACT ON CLINICAL PHARMACIST ACTIVITIES

The overriding goal of the integration of clinical pharmacy technicians into our ambulatory care pharmacy department was to create a stronger team in which each member could use his or her respective skills to the fullest to achieve the best pharmaceutical care for our patients. We feel that we have been successful in approaching this goal. Advances in the activities of our technician staff have been discussed at length. The enhanced clinical pharmacist effectiveness resulting from this role shifting is the other side of our team's success story.

In the past two years, clinical pharmacists have sharpened their focus on optimizing cost-effective medication use through committee involvement and through medication use guideline development and enforcement. Recent budgetary shortfalls were quelled and reductions in force avoided through the successes of a multidisciplinary cost-effectiveness committee. Our institution's medication costs per enrolled patient are among the lowest in the VHA.

Clinical pharmacy has implemented and coordinated a structured polypharmacy program. Pharmacists have been able to expand their influence in disease state management, telepharmacy, and research and to expand disease state management programs in primary care.

Patients with chronic hypertension, hyperlipidemia, diabetes, pain, and other conditions are referred to clinical pharmacists regularly for medication management. We provide pharmaceutical care to our more remote patients through the use of telemedicine videoconferencing equipment. Patients at our clinic in Show Low, AZ are able to discuss their medications with clinical pharmacists in Phoenix on a daily basis. In 2002, clinical pharmacists at our facility came together to form Veterans Affairs Pharmacists Organized for Research (VAPOR), a clinical pharmacy-driven research group that seeks to help pharmacists and technicians develop ideas, complete research projects, and disseminate information about local research and activities.

WHERE DO WE GO FROM HERE?

We hope to continue to expand and modify the roles and duties of the clinical technician in the future as situations dictate. Recently, staff shortages led us to assign clinical pharmacy technicians temporarily to the inpatient pharmacy section—and with good results. Potential opportunities for future use of these technicians include: expanded order entry, patient education (provision of written medication information, blood glucose meter training, diabetic foot checks, metered dose inhaler training), prescriber education (computerized documentation of allergies, adverse drug reactions and over-the-counter and alternative medications), assistance with research and investigational drugs (inventory, data entry, file maintenance), and pharmacoeconomic assignments (database support management, data pulls on costs and clinical outcomes, guideline compliance evaluations).

Clinical technicians have been instrumental in allowing our clinical pharmacy department to expand its role in disease state management and provision of cost-effective care without compromising any of our prior responsibilities. Technician involvement has enhanced the coordination of anticoagulation management, smoking cessation, and clinic inspections. Because of these improvements, clinical technicians and clinical pharmacists have reported increased job satisfaction. ●

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