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Best practices: Incorporating pharmacy technicians and other support personnel into the clinical pharmacist's process of care

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Changes to the U.S. health care landscape have increased the focus on the quality and use of alternative payment models, with a growing focus on value. As health care costs continue to rise, clinical pharmacists will increasingly engage in roles to expand the breadth and depth of clinical services in providing comprehensive medication management (CMM) to improve patient outcomes. The roles of pharmacy technicians and other support personnel must evolve to meet the needs created by this practice change and allow pharmacists to focus their services on activities that use their expertise to improve medication outcomes. Support personnel, including pharmacy technicians, should be identified to assist with clinical pharmacy tasks on the basis of their skills. To ensure competence, support personnel should be adequately trained and (if applicable) certified. Moreover, support personnel should be optimally incorporated into appropriate components of the clinical pharmacist's process of care to expand the reach and depth of clinical pharmacy services. When supervised by the pharmacist or others as defined in state practice acts, support personnel may be able to assist in the clinical pharmacist's provision of CMM. Finally, research should be conducted and disseminated on the utility and outcomes achieved using support personnel in the clinical pharmacist's process of care.

KEYWORDS

clinical pharmacy, comprehensive medication management, medication optimization, pharmacy practice, pharmacy technician, support personnel

1 | INTRODUCTION

Changes to the U.S. health care landscape have increased the focus on quality outcomes and the use of pay-for-performance models.[1] Simultaneously, U.S. health care costs have continued to rise because of factors such as an aging population,[2] increased prevalence of common diseases, and increased number and complexity of medical technology and treatment options, including medications.[3] These factors create an opportunity for clinical pharmacists to expand the breadth and depth of their clinical services in providing comprehensive medication management (CMM) to improve patient outcomes.[1]

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As clinical pharmacists increasingly provide direct patient care, the roles of pharmacy technicians and other support personnel must in turn evolve to support this practice.[4,5] Clinical pharmacists may spend too much time on routine or administrative tasks not requiring clinical expertise and judgment.[6] This issue is not unique to the pharmacy profession; a recent analysis suggests that primary care personnel perform many tasks that could be delegated to individuals with less clinical training.[7] Moreover, appropriately delegating tasks could not only improve efficiency but also be more cost-effective. Delegation would also allow practitioners to increase the depth of care provided. For example, lack of time has been identified as a barrier to optimal implementation of preventive services by physicians,[8,9] advanced practice pharmacists,[10] and community pharmacists.[11–14] Delegating tasks that do not involve clinical expertise and judgment to support personnel could help alleviate these time pressures.

This paper recommends five best practices to engage pharmacy support personnel in work that extends beyond traditional distributive functions to optimize clinical pharmacy services.

1. Identify the appropriate support personnel to assist with clinical pharmacy tasks on the basis of skills.
2. Ensure that support personnel are adequately trained and certified.
3. Incorporate support personnel into appropriate components of the process of care to expand the reach and depth of clinical pharmacy services.
4. Incorporate support personnel into ancillary processes that support clinical pharmacy services.
5. Conduct and disseminate research on the utility and outcomes achieved using support personnel in the clinical pharmacist's process of care.

2 | BACKGROUND

2.1 | Defining pharmacy support personnel

The term *supportive personnel* has historically referred to all nonpharmacist pharmacy personnel.[15] In many pharmacy practice settings, most non-pharmacy personnel are pharmacy technicians, and most published literature focuses on their role as support personnel. However, some settings differentiate between support personnel as pharmacy technicians, certified pharmacy technicians, and/or advanced practice pharmacy technicians, with different roles and responsibilities for each.[16] Nevertheless, as pharmacists continue to expand their involvement in direct patient care activities, it is reasonable to assume that the clinical and non-clinical support personnel typically used by physicians and advanced nurse practitioners will also assist clinical pharmacists and lower overall costs. Examples include support provided by medical assistants, licensed practical nurses, transcriptionists, and administrative personnel whose responsibilities include answering telephone calls, coordinating patient scheduling, and assisting in office/practice management. In addition, staff trained in fundamental patient care activities could be assigned to gather and record vital signs and/or update patients' demographic data. Meanwhile, medical scribes, patient care representatives, medical coders, medical billers, and office managers can assist in department or business operations.

2.2 | Pharmacy technicians

Pharmacy technicians are the most likely candidates to serve as clinical pharmacist extenders as pharmacists continue to expand their involvement in direct patient care activities.[17] Pharmacy technicians have supported the medication fulfillment process for many years, including more advanced work in some practice settings (eg, sterile compounding, "tech-check-tech" programs).[18,19] Therefore, many additional tasks can likely be delegated to pharmacy technicians.

In 2007, ACCP released a position statement on pharmacy technician education, training, and certification that clarified aspects of terminology, certification, practice activities, education requirements, and licensure/registration of pharmacy technicians.[20] The definition of pharmacy technician and the evolution of this role has been well documented in the literature.[21,22] Currently, both the Pharmacy Technician Certification Board and the National Healthcareer Association offer a certification examination for pharmacy technicians.[18,23] The 2007 ACCP position statement supports the term *pharmacy technician* for those who have completed an accredited training program and are certified.[20]

In a recent workforce survey, certified hospital and community technicians reported frequent involvement in traditional technician duties but less involvement in more advanced tasks (eg, verifying the work of other pharmacy technicians).[24] Incorporating pharmacy technicians into the medication use process in a supportive role is a clear focus of the ACCP position statement and related work from other organizations.[20,25] The American Society of Health-System Pharmacists (ASHP) assigned high priority to the role of pharmacy technicians as a significant focus area of the Pharmacy Practice Model Initiative, now the Practice Advancement Initiative.[26] Furthermore, in its 2016 statement on the roles of pharmacy technicians, ASHP clarified that the activities of pharmacy technicians in different settings vary with respect to responsibility and complexity. ASHP notes that some advanced roles may require additional "education, training, experience, and competence." In addition, ASHP differentiates between entry-level competencies, such as basic safe medication practices, medication order entry and distribution, and pharmacy billing and reimbursement, and advanced competencies, such as medication history assistance, advanced medication systems including "tech-check-tech" programs, and immunization assistance.[25] As of this writing, ASHP and the Accreditation Council for Pharmacy Education have also released draft accreditation standards for pharmacy technician education and training that address both entry- and advanced-level technician education and training standards.[27]

However, despite efforts to advance the training and roles of pharmacy technicians, practitioners and state boards of pharmacy have very diverse philosophies on the types of activities and tasks that are appropriate to delegate to pharmacy technicians. Thus, efforts are continuing to explore a consensus on the standards and qualifications of entry-level and advanced pharmacy technicians.[28]

This paper focuses on the role of advanced pharmacy technicians in supporting clinical pharmacy services. However, concurrent pharmacy technician support in distributive functions is critical to the ability of pharmacy technicians and pharmacists to engage in these more advanced

activities.[29] The following five recommendations describe how support personnel, including pharmacy technicians, should optimally be integrated into clinical pharmacy practice to support the clinical pharmacist's process of care. This process, which closely aligns with the pharmacists' patient care process,[30] defines the components of the clinical pharmacist's work in collaboration with other providers to achieve medication optimization. Of importance, even when support personnel are incorporated into the process of care, the clinical pharmacist is ultimately responsible for evaluating medication therapy and developing a plan of care.

3 | RECOMMENDATION 1: IDENTIFY THE APPROPRIATE SUPPORT PERSONNEL TO ASSIST WITH CLINICAL PHARMACY TASKS ON THE BASIS OF SKILLS

When delegating higher-level tasks, the right person must be selected. Job responsibilities that are not role-specific (eg, answering telephone calls) should be allocated to existing support personnel. Skills, together with documented evidence of effectiveness in the respective role, should be considered. Pharmacy technicians and other support personnel have long played a vital role in drug distribution, compounding, billing, and inventory management,[31] and although some published literature has identified non-pharmacy staff as better suited for tasks such as billing and coding or prior authorization,[32] ample published data document their effectiveness in a variety of roles that align with components of the clinical pharmacist's process of care (Table 1). Collaborations with other health care personnel (eg, nurse-pharmacist collaborations)[57] should also be considered, depending on the workflow and staffing within a particular practice setting.

4 | RECOMMENDATION 2: ENSURE THAT SUPPORT PERSONNEL ARE ADEQUATELY TRAINED AND CERTIFIED

Pharmacists must consider educating and training support personnel such that they have the necessary knowledge, skills, and attitudes to carry out their assigned tasks. Staff should be appropriately trained to fulfill job responsibilities through mechanisms such as formal coursework (from accredited bodies, if applicable), certification, and internal training.[20] Programs with documented success using pharmacy technicians and other support personnel have identified factors associated with effectiveness, including use of certified technicians[33,58,59] and/or internal training.[33,46,58,60]

Adequate time for orientation, training, and competency assessment is needed for pharmacy support personnel. Beyond certification, training for specific tasks (eg, medication reconciliation) should be provided. One practice reported success with allocating 4 months for technician development to support clinical pharmacy services in a patient-centered medical home through training in administrative duties and patient education.[46] Training timelines may vary depending on the tasks to be performed.

Moreover, although several different successful models for engaging support personnel have been demonstrated, the roles of support personnel should not be expanded until adequate training and certification are completed. In 2003, the Council on Credentialing in Pharmacy published a white paper outlining recommendations to develop the pharmacy technician workforce.[16] In 2007, ACCP noted that much work was still needed to advance pharmacy technician education to help ensure an adequately trained workforce.[20] Furthermore, participants in the 2017 Pharmacy Technician Stakeholder Consensus Conference largely agreed that the pharmacy profession should move toward developing and adopting national standards for pharmacy technician education.[28] While this work continues, individual institutions may incorporate site-specific training for the tasks at hand.

5 | RECOMMENDATION 3: INCORPORATE SUPPORT PERSONNEL INTO APPROPRIATE COMPONENTS OF THE PROCESS OF CARE TO EXPAND THE REACH AND DEPTH OF CLINICAL PHARMACY SERVICES

The clinical pharmacist's process of care should be consistent and patient centered. Throughout this process, clinical pharmacists collaborate and communicate with other members of the health care team and document their contributions to patient care. When supervised by the pharmacist or others as defined in state practice acts, support personnel can assist in many of these components and in turn assist in the clinical pharmacist's provision of CMM (Table 1).

ACCP's 2014 Standards of Practice for Clinical Pharmacists outline four main components of the clinical pharmacist's process of care: (1) assessment of the patient, (2) evaluation of medication therapy, (3) development and implementation of a plan of care, and (4) follow-up evaluation and medication monitoring.[61,62] These components can be used as a framework to determine how to incorporate support from other personnel and maximize clinical pharmacists' abilities to function at the top of their education and training to achieve medication optimization. Moreover, each component of the clinical pharmacist's process of care requires documentation, providing a fifth opportunity to incorporate support from other personnel. The following published examples detail how pharmacy technicians, as well as clinical and non-clinical support personnel, can engage in tasks that support the clinical pharmacist in specific components of the process of care.

5.1 | Assessment of the patient

Pharmacy technicians and other support personnel can help obtain and organize relevant patient data for assessment by the clinical pharmacist in both direct patient care and population health initiatives. Many examples involving pharmacy technicians in the medication reconciliation process exist,[34,35,58,59,63–71] and successful examples are available in a wide range of practices and settings, including emergency departments,[59,63–66,72] pediatrics,[67] geriatrics,[68] hemodialysis units,[69] mental health,[70] and academic medical centers[58] and in preoperative screenings.[71] Medication histories from certified technicians are at least as accurate as medication histories from other members of the health care team.[34,35,59,67]

Beyond the reconciled medication list, trained technicians can use standardized communication (eg, “cue cards” with questions) to collect additional information on other aspects of patient care (eg, adherence,

TABLE 1 Selected examples of support personnel in the provision of clinical pharmacy services

Activity and/or setting	Support personnel	Summary of findings
Medication reconciliation/ medication history	Pharmacy technicians	• Use of pharmacy staff was recommended to achieve best patient outcomes[33–38] • Histories obtained by pharmacy technicians were more accurate than those obtained by nurses[35,36] • Pharmacy technician–led discharge medication reconciliation improved transitions of care and identified drug therapy problems[33] • No difference in discrepancies between pharmacist and pharmacy technician[37] • Discrepancies with higher clinical impact were more likely to be identified by pharmacy personnel than by usual care[37] • Pharmacists spent less time than nurses in medication reconciliation; physicians more often agreed with recommendations from pharmacists than from nurses[34]
Preventive health	Medical assistants, licensed practical nurses, pharmacy technicians	• Use of medical assistants increased documentation of smoking status in the electronic health record and increased referrals to a quit program[39] • Use of support staff increased the rate of preventive screening with fecal occult blood tests[40] • Immunization training program for technicians in Idaho increased confidence with immunization skills with zero adverse events reported[41]
General support in inpatient and outpatient settings	Pharmacy technicians	• Pharmacy technicians collected and organized clinical data for pharmacists, tracked adherence, and screened for eligibility of services/medications[42–45] • Pharmacy technicians scheduled patients referred to or identified for the clinical pharmacy service[46,47] • Pharmacy technicians performed reminder telephone calls, rescheduling, and correspondence letters[46–49] • Some studies documented time savings for the pharmacist[43,44]
Ambulatory care, specialty clinics	Advanced practice or clinical pharmacy technicians	• Study identified appropriate administrative and clinical roles for CPTs and advanced practice CPTs in an anticoagulation clinic through the Delphi process[48] • Clinical pharmacy technicians have been used in anticoagulation management, therapeutic interchange, medication box clinic, patient triage, clinic inspections, and clinic support[50] • Pharmacy technicians improved continuity of care and facilitated medication adherence in specialty clinics by enrolling patients in the benefit program, completing prior authorizations, and setting up copay assistance programs[51]
Patient/caregiver education	Pharmacy technicians	• Technicians in Canada instructed caregivers of pediatric patients on sterile product preparation[52]
Patient adherence	Pharmacy technicians	• Systematic review described the value of pharmacy technicians in managing patient adherence programs[47]
Informatics	Pharmacy technicians	• Pharmacy technicians have been used as data analysts to expand services in a drug use and disease state management program[53] • Pharmacy technician informaticists assist in developing, maintaining, and using databases and systems[53,54]
Medication safety	Pharmacy technicians	• Pharmacy technicians have been involved with medication safety tasks such as planning/organizing meetings, researching safety events, and assisting with safety projects[55]
Drug shortages	Pharmacy technicians	• Pharmacy technicians can assist with identifying drug shortages and initial stages of management[56]

Abbreviation: CPT, certified pharmacy technician.

immunization status), which the clinical pharmacist can then review and assess in the ambulatory care or community setting.[42] Certified medical assistants, certified nursing assistants, and licensed practical nurses routinely initiate a patient's visit for other health care practitioners by placing the patient in an examination room, taking vital signs, and verifying medication. These technicians should be able to support clinical pharmacists in a similar manner. As part of this visit initiation, these personnel or pharmacy technicians can also determine and document a patient's preferred pharmacy and perform and document point-of-care testing[48] for clinical pharmacists in the outpatient setting, in turn allowing the clinical pharmacist in these settings additional time to focus on more advanced tasks.

Support personnel can also collect information for population health initiatives. This includes using a set of criteria that tracks adherence to care standards, which subsequently helps identify high-risk patients who might benefit from pharmacy services,[33,43,73,74] and collecting designated laboratory data for pharmacist review.[48,72,74] Other population health initiatives include reviewing adherence data and quality measure performance.[47]

5.2 | Evaluation of medication therapy

Although pharmacy technicians and other support personnel can assist with other components of the clinical pharmacist's process of care, only the clinical pharmacist is responsible for evaluating medication therapy. However, published literature supports involving technicians in other areas of the process of care to expand an organization's capacity to assess medication use in more patients. For example, using a clinical pharmacy support technician to help collect information before rounds in an ICU allowed the clinical pharmacy specialist to spend more time on cognitive-based activities and increased the number of patients assessed by 50%.[75] Similarly, data analyst technicians

who helped review patient data in the ICU contributed to a 3-fold increase in the number of patients assessed by pharmacists.[53] In another study, engaging the support of a certified pharmacy technician decreased the time to completing a new referral from 22 days to 10 days.[46] Elsewhere, creating a pharmacy technician clinical support role resulted in a 40.5% increase in comprehensive medication reviews performed by a pharmacist and a 42.4% decrease in time needed to complete each review.[74]

5.3 | Development and implementation of a plan of care

Pharmacy technicians and/or other support personnel can be integral in carrying out the plan of care designed by the clinical pharmacist and interprofessional health care team by supporting patient assistance programs,[51,76] entering orders,[46,48,77] facilitating transitions of care,[33] communicating cancellation of refills for discontinued medications, authorizing refills according to established protocols,[78] helping with prior authorizations[32] or nonformulary requests,[46] organizing and stocking patient education materials,[46,74] administering immunizations to patients,[41,79,80] and assisting with medication delivery to the bedside before discharge in hospitalized patients.[81] In both hospital and community settings, it is well established that pharmacy technicians enter medication orders into the electronic medical record for pharmacist review and approval. In the ambulatory care setting, a technician may be able to serve in a similar capacity[60] to increase the clinical pharmacist's available time to engage in direct patient care activities. When outlined in the clinical pharmacist's care plan, support personnel can also assist with scheduling and communicating referrals to other health care providers.[42,43,46,50,82]

5.4 | Follow-up evaluation and medication monitoring

Both clinical and non-clinical support staff may be able to schedule patients referred to the clinical pharmacist.[46,47] They may also help provide reminder telephone calls for visits[82] and reschedule those who may have cancelled or missed appointments[46–49] or missed a scheduled laboratory follow-up[48] to ensure that patients receive the planned follow-up through telephone calls or written correspondence letters. Support personnel may help follow the patient's care and track the status of transitions from hospital to rehabilitation or home health care and to the clinic. When laboratory data specified in the pharmacy care plan are available for review, support staff can highlight and prioritize out-of-range laboratory values.[48]

5.5 | Documentation

Throughout the process of care, clinical pharmacists document directly in the patient's medical record. Pharmacy technicians and other support personnel assisting with collecting and organizing patient data for patient assessment will similarly be involved in documenting their findings. In addition, expanded support for documentation can be explored through a medical scribe's services in documenting patient care visits. Studies in family practice have noted that progress notes written by scribes are of similar or increased quality[83] and are accepted by patients[84] while improving clinician satisfaction and efficiency.[84] Similar practices in clinical pharmacy should be explored.

6 | RECOMMENDATION 4: INCORPORATE SUPPORT PERSONNEL INTO ANCILLARY PROCESSES THAT SUPPORT CLINICAL PHARMACY SERVICES

Beyond patient-specific services, support personnel may contribute to accreditation activities and quality improvement processes. An evaluation of the Center for Pharmacy Practice Accreditation standards for community pharmacy accreditation identified pharmacy technicians' potential to assist in meeting accreditation standards by contributing in all domains, including practice management, nonprescription drug counseling, and quality improvement programs.[85]

Technicians and support personnel with experience in billing and coding have been used in specialty pharmacies to support daily operations.[32,86] In addition to managing the prior authorization process, technicians assist with financial assessments, coordinate case management activities, facilitate refill and medication delivery, document education in the electronic medical record, and assist with adherence monitoring.[51,86,87]

To support quality improvement activities and pharmacy operations, data analyst functions performed by support personnel include running monthly reports on drug use patterns to assess financial impact, compiling and administering satisfaction surveys to obtain feedback on clinical pharmacy services, and assessing outcomes of institutional initiatives and quality improvement reporting.[53] A technician informaticist with skills in developing, maintaining, and using systems and databases can help streamline workflows, test reporting functionalities, and teach others in the institution how to use the technology systems in support of medication use safety policies.[54] In fact, safety technicians can manage the administrative tasks of planning and organizing safety meetings for the safety team, researching safety events and medication errors, and reporting identified safety projects.[55] Technicians embedded in specific clinical services can track both encounter metrics and safety metrics.[46] Or, to support the clinical service, these technicians can be delegated to perform and log quality control assessments for point-of-care testing devices.[88] Engaging technicians in the continuous quality improvement process promotes a culture of cooperative responsibility for both quality and safety.[85]

The role of pharmacy technicians as managers has also been explored.[89,90] Although not specifically addressed in this paper, support personnel can also assist in other non-clinical areas of pharmacy practice, including research[91] and teaching,[92–94] which can lend further support to an organization's ability to provide clinical pharmacy services.

7 | RECOMMENDATION 5: CONDUCT AND DISSEMINATE RESEARCH ON THE UTILITY AND OUTCOMES ACHIEVED USING SUPPORT PERSONNEL IN THE CLINICAL PHARMACIST'S PROCESS OF CARE

Sharing descriptions of best practices for incorporating pharmacy technicians and other personnel into support for the clinical pharmacist's provision of CMM is important to advancing the technician's role. Studies of both the clinical outcomes and the economic impact of incorporating support personnel into clinical pharmacy services will justify the expansion of their roles while supporting the triple aim of improving quality, improving health, and reducing costs. Current evidence suggests that incorporating pharmacy technicians and other support personnel into the process of care increases the pharmacist's time to engage in CMM[46,51,74] and decreases wasted medications, resulting in substantial cost savings without compromising quality.[78] However, the impact of this evidence is limited, given that most of the studies were single-center investigations. In addition, future studies should clearly describe the expertise, background, and training of individuals supporting the pharmacist.[95] Moreover, outcomes and reasons for success or failure should be explored and described.

8 | FUTURE DIRECTIONS

Once pharmacy technicians and other support personnel are fully engaged in supporting the direct patient care process, they must be provided opportunities for advancement and growth.[61] After significant investments in their training, keeping such personnel engaged and advancing will be essential to retention. Technicians engaged in medication reconciliation have reported relief from repetitive dispensing tasks.[44,58] Authors of recent workforce surveys suggest that technicians are responsive to assuming increased responsibility.[24,44,96] Others note how increased interaction of technicians with other members of the health care team increases collegiality.[82] Trained, capable support personnel are part of the team contributing to patient care and should be recognized as such.

9 | CONCLUSION

Identifying and providing training for pharmacy technicians and other support personnel can facilitate their integration into aspects of the clinical pharmacist's process of care. Pharmacy technicians may assist the clinical pharmacist by collecting and organizing patient information and performing medication reconciliation. This improved efficiency will allow the clinical pharmacist to focus on evaluating information and developing patient-centered plans of care. Once a plan of care has been determined and discussed, pharmacy technicians may help successfully implement it by supporting patient assistance programs, assisting with nonformulary or prior authorization requests, authorizing refills per protocol, administering vaccinations, and performing many other activities.

Scrutiny of health care costs, emphasis on patient outcomes, and use of alternative payment models dominate much of the discussion between the health care industry and its stakeholders. In this environment, the clinical pharmacist is an essential contributor to medication optimization. Expanded use of pharmacy support personnel is necessary to allow clinical pharmacists increased time to devote to direct patient care activities and CMM.

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REFERENCES

1. American College of Clinical Pharmacy, McBane SE, Dopp AL, et al. Collaborative drug therapy management and comprehensive medication management – 2015. *Pharmacotherapy*. 2015;35:e39–e50.
2. Administration for Community Living (ACL). Administration on Aging. Profile of older Americans; 2016 [cited 2018 May 30]. Available from https://www.acl.gov/node/537.
3. Kumar RK. Technology and healthcare costs. *Ann Pediatr Cardiol*. 2011;4:84–86.
4. Koehler T, Brown A. Documenting the evolution of the relationship between the pharmacy support workforce and pharmacists to support patient care. *Res Social Adm Pharm*. 2017;13:280–285.
5. Abramowitz PW, Cobaugh DJ. Education and certification of pharmacy technicians: a noble decision is long overdue. *Am J Health Syst Pharm*. 2017;74:1303–1304.
6. American Pharmacists Association (APhA). 2012 APhA career pathway evaluation survey. APhA, 2013 [cited 2018 May 30]. Available from https://www.pharmacist.com/sites/default/files/files/Profile_07%20Clinical%20specialist%20Final%20071113.pdf.
7. Hysong SJ, Best RG, Moore FI. Are we under-utilizing the talents of primary care personnel? A job analytic examination. *Implement Sci*. 2007;30:10.
8. Belcher DW. Implementing preventive services. Success and failure in an outpatient trial. *Arch Intern Med*. 1990;150:2533–2541.
9. Ayres CG, Griffith HM. Perceived barriers to and facilitators of the implementation of priority clinical preventive service guidelines. *Am J Manag Care*. 2007;13:150–155.
10. Murawski M, Villa KR, Dole EJ, et al. Advanced-practice pharmacists: practice characteristics and reimbursement of pharmacists certified for collaborative clinical practice in New Mexico and North Carolina. *Am J Health Syst Pharm*. 2011;68:2341–2350.
11. Gregorio J, Cavaco AM, Lapão LV. How to best manage time interaction with patients? Community pharmacist workload and service provision analysis. *Res Social Adm Pharm*. 2017;13:133–147.
12. Mansoor SM, Krass J, Costa DS, Aslani P. Factors influencing the provision of adherence support by community pharmacists: a structural equation modeling approach. *Res Social Adm Pharm*. 2015;11:769–783.
13. Murphy AL, Phelan H, Haslam S, Martin-Misener R, Kutcher SP, Gardner DM. Community pharmacists' experiences in mental illness and addictions care: a qualitative study. *Subst Abuse Treat Prev Policy*. 2016;11:6.

14. René-Henri N, Khamla Y, Nadaira N, et al. Community pharmacists' interventions in asthma care: a descriptive study. *Ann Pharmacother*. 2009;43:104–111.
15. ASHP outcome competencies for institutional pharmacy technician training programs (with training guidelines). *Am J Hosp Pharm*. 1982; 39:317–320.
16. White paper on pharmacy technicians (2002): needed changes can no longer wait. *J Am Pharm Assoc*. 2003;43:93–107.
17. Schafheutle EI, Jee SD, Willis SC. Fitness for purpose of pharmacy technician education and training: the case of Great Britain. *Res Social Adm Pharm*. 2017;13:88–97.
18. Pharmacy Technician Certification Board (PTCB). PTCB announces advanced certification program; 2012 [cited 2018 May 30]. Availbale from https://www.ptcb.org/about-ptcb/news-room/news-landing/2012/11/30/ptcb-announces-advanced-certification-program#.WDwiyLIrJpg.
19. Adams AJ, Martin SJ, Stolpe SF. "Tech-check-tech": a review of the evidence on its safety and benefits. *Am J Health Syst Pharm*. 2011;68: 1824–1833.
20. American College of Clinical Pharmacy (ACCP). Position statement. Pharmacy technician education, training, and certification. 2007 [cited 2018 May 30]. Available from www.accp.com/docs/positions/positionStatements/Technician_Position_Statement.pdf.
21. Myers CL. Opportunities and challenges related to pharmacy technicians in supporting optimal pharmacy practice models in health systems. *Am J Health Syst Pharm*. 2011;68:1128–1136.
22. Keresztes J. Role of pharmacy technicians in the development of clinical pharmacy. *Ann Pharmacother*. 2006;40:2015–2019.
23. National Healthcareer Association (NHA). Pharmacy technician certification [cited 2017 October 3]. Available from www.nhanow.com/certifications/pharmacy-technician.
24. Desselle SP, Holmes ER. Results of the 2015 National Certified Pharmacy Technician Workforce Survey. *Am J Health Syst Pharm*. 2017;74: 981–991.
25. American Society of Health-System Pharmacists (ASHP). ASHP statement on the roles of pharmacy technicians. *Am J Health Syst Pharm*. 2016;73:928–930.
26. American Society of Health-System Pharmacists (ASHP). Practice advancement initiative [cited 2017 October 3]. Available from www.ashpmedia.org/pai/.
27. American Society of Health-System Pharmacists (ASHP). Accreditation standards, regulations, and other tools [cited 2018 February 13]. Available from. https://www.ashp.org/Professional-Development/Technician-Program-Accreditation/Accreditation-Standards.
28. Zellmer WA, McAllister EB, Silvester JA, Vlasses PH. Toward uniform standards for pharmacy technicians: summary of the 2017 Pharmacy Technician Stakeholder Consensus Conference. *Am J Health Syst Pharm*. 2017;74:1321–1332.
29. American College of Clinical Pharmacy (ACCP). The definition of clinical pharmacy. *Pharmacotherapy*. 2008;28:816–817.
30. Joint Commission of Pharmacy Practitioners (JCPP). Pharmacists' patient care process. 2014 [cited 2018 May 39]. Available from https://www.pharmacist.com/sites/default/files/files/PatientCare Process.pdf.
31. Shultz JM, Jeter CK, Martin NM, Mundy TK, Reichard JS, Van Cura JD. ASHP statement on the roles of pharmacy technicians. *Am J Health Syst Pharm*. 2016;73:928–930.
32. Leinss R, Karpinski T, Patel B. Implementation of a comprehensive medication prior-authorization service. *Am J Health Syst Pharm*. 2015; 72:159–163.
33. Bailey JE, Surbhi S, Bell PC, Jones AM, Rashed S, Ugwueke MO. SafeMed: using pharmacy technicians in a novel role as community health workers to improve transitions of care. *J Am Pharm Assoc*. 2016;56: 73–81.
34. Aag T, Garcia BH, Viktil KK. Should nurses or clinical pharmacists perform medication reconciliation? A randomized clinical trial. *Eur J Clin Pharmacol*. 2014;70:1325–1332.
35. Markovic M, Mathis AS, Ghin HL, Gardiner M, Fahim G. A comparison of medication histories obtained by a pharmacy technician versus nurses in the emergency department. *P T*. 2017;42:41–46.
36. Bowman C, McKenna J, Schneider P, Barnes B. Comparison of medication history accuracy between nurses and pharmacy personnel. *J Pharm Pract*. 2017; http://journals.sagepub.com/doi/abs/10.1177/0897190017739982 [Epub ahead of print].
37. Mekonnen AB, McLachlan AJ, Brien JA. Pharmacy-led medication reconciliation programmes at hospital transitions: a systematic review and meta-analysis. *J Clin Pharm Ther*. 2016;41:128–144.
38. Mueller SK, Sponsler KC, Kripalani S, Schnipper JL. Hospital-based medication reconciliation practices: a systematic review. *Arch Intern Med*. 2012;172:1057–1069.
39. Greenwood DA, Parise CA, MacAller TA, et al. Utilizing clinical support staff and electronic health records to increase tobacco use documentation and referrals to a state quitline. *J Vasc Nurs*. 2012;30:107–111.
40. Thompson NJ, Boyko ED, Dominitz JA, et al. A randomized controlled trial of a clinic-based support staff intervention to increase the rate of fecal occult blood test ordering. *Prev Med*. 2000;30:244–251.
41. McKeirnan KC, Frazier KR, Nguyen M, McLean LG. Training pharmacy technicians to administer immunizations. *J Am Pharm Assoc*. 2003, 2018;58:174–178.e1.
42. Lo A, Co M, Lo C, Chua D, Soltesz D. Specialized pharmacy oncology technician: experience at the Ridge Meadows Hospital. *Can J Hosp Pharm*. 2010;63:138–141.
43. Irwin AN, Heilmann RM, Gerrity TM, Kroner BA, Olson KL. Use of a pharmacy technician to facilitate post-fracture care provided by clinical pharmacy specialists. *Am J Health Syst Pharm*. 2014;71: 2054–2059.
44. Elliott RA, Perera D, Mouchaileh N, et al. Impact of an expanded ward pharmacy technician role on service-delivery and workforce outcomes in a subacute aged care service. *J Pharm Pract Res*. 2014;44:95–104.
45. Koch KE, Weeks A. Clinically oriented pharmacy technicians to augment clinical services. *Am J Health Syst Pharm*. 1998;55:1375–1381.
46. Evans JL, Gladd EM, Gonzalez AC, et al. Establishing a clinical pharmacy technician at a United States Army military treatment facility. *J Am Pharm Assoc*. 2016;56:573–579.
47. Kadia NK, Schroeder MN. Community pharmacy-based adherence programs and the role of pharmacy technicians. *J Pharm Technol*. 2015;31:51–57.
48. Kuhn H, Park A, Kim B, Lukesh W, Rose A. Proportion of work appropriate for pharmacy technicians in anticoagulation clinics. *Am J Health Syst Pharm*. 2016;73:322–327.
49. Powers MF, Bright DR. Pharmacy technicians and medication therapy management. *J Pharm Technol*. 2008;24:336–339.
50. Weber E, Hepfinger C, Koontz R, Cohn-Oswald L. Pharmacy technicians supporting clinical functions. *Am J Health Syst Pharm*. 2005;62: 2466–2472.
51. Gilbert EM, Gerzenshtein L. Integration of outpatient infectious diseases clinic pharmacy services and specialty pharmacy services for patients with HIV infection. *Am J Health Syst Pharm*. 2016;73: 757–763.
52. Chevalier BA, MacDonald SA. Expanding the pharmacy technicians' role in medication teaching. *Am J Health Syst Pharm*. 2003;60: 709–710.
53. Ervin KC, Sledar S, Hess MM, Ryan M. Data analyst technician: an innovative role for the pharmacy technician. *Am J Health Syst Pharm*. 2001;58:1815–1818.
54. White KC, Hohmeier KC. Pharmacy informatics: current and future roles for the pharmacy technician. *J Pharm Technol*. 2015;31: 247–252.
55. Brown KN, Bergsbaken J, Reichard JS. Medication safety pharmacy technician in a large, tertiary care, community hospital. *Am J Health Syst Pharm*. 2016;73:188–191.
56. Mangan MN, Powers MF. Drug shortages and the role of the pharmacy technician: a review. *J Pharm Technol*. 2011;27:247–250.
57. Feldman LS, Costa LL, Feroli ER Jr, et al. Nurse-pharmacist collaboration on medication reconciliation prevents potential harm. *J Hosp Med*. 2012;7:396–401.
58. Sen S, Siemianowski L, Murphy M, McAlister SC. Implementation of a pharmacy technician-centered medication reconciliation program at an urban teaching medical center. *Am J Health Syst Pharm*. 2014;71: 51–56.

59. Hart C, Price C, Graziose G, Grey J. A program using pharmacy technicians to collect medication histories in the emergency department. *P T*. 2015;40:56–61.
60. Neville H, Broadfield L, Harding C, Heukshorst S, Sweetapple J, Rolle M. Chemotherapy order entry by a clinical support pharmacy technician in an outpatient medical day unit. *Can J Hosp Pharm*. 2016; 69:202–208.
61. American College of Clinical Pharmacy (ACCP). Standards of practice for clinical pharmacists. *Pharmacotherapy*. 2014;34:794–797.
62. American College of Clinical Pharmacy (ACCP). Comprehensive medication management in team-based care [cited 2018 February 8]. Available from https://www.accp.com/docs/positions/misc/CMM%20Brief.pdf.
63. Henriksen JP, Noerregaard S, Buck TC, Aagaard L. Medication histories by pharmacy technicians and physicians in an emergency department. *Int J Clin Pharm*. 2015;37:1121–1127.
64. Johnston R, Saulnier L, Gould O. Best possible medication history in the emergency department: comparing pharmacy technicians and pharmacists. *Can J Hosp Pharm*. 2010;63:359–365.
65. Knight H, Edgerton L, Foster R. Pharmacy technicians obtaining medication histories within the emergency department. *Am J Health Syst Pharm*. 2010;67:512–514.
66. Patanwala AE. Emergency pharmacy practice and medication reconciliation. *Am J Health Syst Pharm*. 2014;71:2167–2168.
67. Chan C, Woo R, Seto W, Pong S, Gilhooly T, Russell J. Medication reconciliation in pediatric cardiology performed by a pharmacy technician: a prospective cohort comparison study. *Can J Hosp Pharm*. 2015; 68:8–15.
68. Buck TC, Gronkjaer LS, Duckert ML, Rosholm JU, Aagaard L. Medication reconciliation and prescribing reviews by pharmacy technicians in a geriatric ward. *J Res Pharm Pract*. 2013;2:145–150.
69. Leung M, Jung J, Lau W, Kiaii M, Jung B. Best possible medication history for hemodialysis patients obtained by a pharmacy technician. *Can J Hosp Pharm*. 2009;62:386–391.
70. Brownlie K, Schneider C, Culliford R, et al. Medication reconciliation by a pharmacy technician in a mental health assessment unit. *Int J Clin Pharm*. 2014;36:303–309.
71. Van Den Bemt PMLA, Van Den Broek S, Van Nunen AK, Harbers JBM, Lenderink AW. Medication reconciliation performed by pharmacy technicians at the time of preoperative screening. *Ann Pharmacother*. 2009;43:868–874.
72. Cater SW, Luzum M, Serra AE, et al. A prospective cohort study of medication reconciliation using pharmacy technicians in the emergency department to reduce medication errors among admitted patients. *J Emerg Med*. 2015;48:230–238.
73. Justis L, Crain J, Marchetti ML, Hohmeier KC. The effect of community pharmacy technicians on industry standard adherence performance measures after cognitive pharmaceutical services training. *J Pharm Technol*. 2016;32:230–233.
74. Fera T, Kanel KT, Bolinger ML, Fink AE, Iheasirim S. Clinical support role for a pharmacy technician within a primary care resource center. *Am J Health Syst Pharm*. 2018;75:139–144.
75. Mabasa VH, Malyuk DL, Tung A, Balen RM, Nicolls TR, Rahiman NL. Using clinical pharmacy support technicians to optimize pharmaceutical care in the intensive care unit. *Can J Hosp Pharm*. 2010;63:41–45.
76. Mounts VL, Ringenberg DG, Rhees K, Partridge C. Implementation of a patient medication assistance program in a community pharmacy setting. *J Am Pharm Assoc*. 2005;45:76–81.
77. Hickman L, Poole SG, Hopkins RE, Walters D, Dooley MJ. Comparing the accuracy of medication order verification between pharmacists and a tech check tech model: a prospective randomised observational study. *Res Social Adm Pharm*. 2017; https://doi.org/10.1016/j.sapharm.2017.11.007. [Epub ahead of print].
78. Thompson Bastin ML, McLaughlin C, Turner B, Simpson R, Williams M, Li J. Development of an ICU-based pharmacy technician to improve the medication distribution process. *Crit Care Med*. 2016; 44(12 suppl 1):95.
79. Atkinson D, Adams A, Bright D. Should pharmacy technicians administer immunizations? *Inov Pharm*. 2017;8: Article 16:1-5.
80. Bright D, Adams AJ. Pharmacy technician-administered vaccines in Idaho. *Am J Health Syst Pharm*. 2017;74:2033–2034.
81. Van Gorder CM, Yost SH, Negrelli JM, Anderson SH, Chew C. Effective decentralization of a pharmacy technician to facilitate delivery of medications prior to discharge in a community hospital. *J Pharm Technol*. 2017;33:123–127.
82. Henderson D, Johnson-Choong S, Wiles S. Pharmacy technician's role in an ambulatory care infusion clinic. *Am J Health Syst Pharm*. 2000; 57:1664–1665.
83. Misra-Hebert AD, Amah L, Rabovsky A, et al. Medical scribes: how do their notes stack up? *J Fam Pract*. 2016;65:155–159.
84. Earls ST, Savageau JA, Begley S, Saver BG, Sullivan K, Chuman A. Can scribes boost FPs' efficiency and job satisfaction? *J Fam Pract*. 2017; 66:206–214.
85. Mihalopoulos CC, Powers MF. Roles for pharmacy technicians in community pharmacy practice accreditation. *J Pharm Technol*. 2013;29: 111–117.
86. Rim MH, Smith L, Kelly M. Implementation of a patient-focused specialty pharmacy program in an academic healthcare system. *Am J Health Syst Pharm*. 2016;73:831–838.
87. Bagwell A, Kelley T, Carver A, Lee JB, Newman B. Advancing patient care through specialty pharmacy services in an academic health system. *J Manag Care Spec Pharm*. 2017;23:815–820.
88. Keller ME, Kelling SE, Bright DR. Pharmacy technicians and point of care testing. *J Pharm Technol*. 2015;31:143–148.
89. Raymond CB, Santos CE, Caligiuri C. Should pharmacy technician managers be responsible for the drug distribution system within hospital pharmacy departments? The “pro” side. *Can J Hosp Pharm*. 2011; 64:218–219.
90. Levesque J. Should pharmacy technician managers be responsible for the drug distribution system within hospital pharmacy departments? The “con” side. *Can J Hosp Pharm*. 2011;64:219–220.
91. Siden R, Tamer HR, Skyles AJ, Dolan CS, Propes DJ, Redic K. Survey to assess the role of pharmacy technicians and nonpharmacist staff in the operation of research pharmacies. *Am J Health Syst Pharm*. 2014; 71:1877–1889.
92. Fung SM, Gilmour C, McCracken D, Shane K, Matsuura G. Nontraditional roles for certified pharmacy technicians in a pharmaceutical company. *J Am Pharm Assoc*. 2006;46:507–510.
93. Mack DR. The pharmacy technician's role in pharmacy student education. *Am J Pharm Educ*. 2008;72:138.
94. Hudgens J, Park T. Perceptions of pharmacy technicians and students regarding technicians as pharmacy instructors. *Am J Pharm Educ*. 2011;75:151.
95. Hoffman TC, Glasziou PP, Boultron I, et al. Better reporting of interventions: template for intervention description and replication (TIDieR) checklist and guide. *BMJ*. 2014;348:1687.
96. MacKinnon NJ, Penm J, Jorgenson D, Smith J. Part 3. Perspectives of pharmacy technicians on practice change. *Can Pharm J*. 2017;150: 239–242.

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