Published in final edited form as:

Res Social Adm Pharm. 2012 ; 8(3): 206–216. doi:10.1016/j.sapharm.2011.06.001.

A qualitative assessment of a community pharmacy cognitive pharmaceutical services program, using a work system approach

Michelle A. Chui, Pharm.D., Ph.D.^{a,*}, David A. Mott, Ph.D.^a, and Leigh Maxwell, Ph.D.^b

^aDivision of Social and Administrative Sciences, University of Wisconsin—Madison, School of Pharmacy, 777 Highland Avenue, 2513 Rennebohm Hall, Madison, WI 53705, USA

^bCollege of Humanities, University of Phoenix, Communication Studies, Edgewood College, 1000 Edgewood College Drive, Madison, WI 53711, USA

Abstract

Background—Although lack of time, trained personnel, and reimbursement have been identified as barriers to pharmacists providing cognitive pharmaceutical services (CPS) in community pharmacies, the underlying contributing factors of these barriers have not been explored. One approach to better understand barriers and facilitators to providing CPS is to use a work system approach to examine different components of a work system and how the components may impact care processes.

Objectives—The goals of this study were to identify and describe pharmacy work system characteristics that pharmacists identified and changed to provide CPS in a demonstration program.

Methods—A qualitative approach was used for data collection. A purposive sample of 8 pharmacists at 6 community pharmacies participating in a demonstration program was selected to be interviewed. Each semistructured interview was audio recorded and transcribed, and the text was analyzed in a descriptive and interpretive manner by 3 analysts. Themes were identified in the text and aligned with 1 of 5 components of the Systems Engineering Initiative for Patient Safety (SEIPS) work system model (organization, tasks, tools/technology, people, and environment).

Results—A total of 21 themes were identified from the interviews, and 7 themes were identified across all 6 interviews. The organization component of the SEIPS model contained the most ($n = 10$) themes. Numerous factors within a pharmacy work system appear important to enable pharmacists to provide CPS. Leadership and foresight by the organization to implement processes (communication, coordination, planning, etc.) to facilitate providing CPS was a key finding across the interviews. Expanding technician responsibilities was reported to be essential for successfully implementing CPS.

Conclusions—To be successful in providing CPS, pharmacists must be cognizant of the different components of the pharmacy work system and how these components influence providing CPS.

Keywords

Medication therapy management; Community pharmacy; Human factors; Work systems

Introduction

In response to the call for greater health care quality, the Medicare Modernization Act of 2003 provided for medication therapy management (MTM) services for patients with the goals of providing education, improving adherence, and detecting adverse drug events and medication misuse. Pharmacists recognize the value of providing cognitive pharmaceutical services (CPS), such as MTM services (both financial and patient care oriented), but have long recognized significant barriers to adding CPS to their already hectic workflow. Perceived barriers have prevented pharmacists from either implementing and/or sustaining CPS. Not surprisingly, lack of time, trained personnel, and reimbursement have been cited as the reasons pharmacists are not providing CPS.¹⁻⁷

Although studies provide some insight on potential barriers to pharmacists providing CPS, they do not address or expand on the underlying contributing factors for the lack of time and/or lack of trained personnel.^{2,3} Lack of time may be because of a combination of factors, including high prescription volume, poor acceptance and use of technology, limited or inexperienced staff, corporate or organizational conflicts, a workflow that has not been revised to accommodate changes in practice, such as increased patient counseling, prescription volume, or additional personnel or technology, or other factors. The manner in which factors contributing to a lack of time/personnel manifest themselves as barriers to providing CPS is unknown, and no known research has characterized these factors and explored possible solutions.

One approach to better understand barriers and facilitators to providing CPS is to adopt a work system approach. A work system approach includes both a view of a current system in operation and a dynamic view of how a system evolves over time through planned change and unplanned adaptations. The approach is prescriptive enough to be useful in describing the system being studied, identifying problems and opportunities, describing possible changes, and tracing how those changes might affect other parts of the work system.^{8,9}

The Systems Engineering Initiative for Patient Safety (SEIPS) model was adopted to study pharmacy work systems (Fig. 1).¹⁰ The model served as a useful framework for studying work system change and design because it provides a holistic view of a work system rather than focusing on a single component. It is grounded in human factors engineering principles and offers a framework for examining different components of a work system, interactions between components, and how the components may impact care processes and outcomes. The model consists of 5 key components of the work system: people, organization, technology/tools, tasks, and environment. The model has been used to study how interrelationships between the structural components of the work system interact to influence various work system processes and ultimately the outcomes of the work system.¹¹⁻¹³ The SEIPS model might offer an improvement over Donabedian's Structure-Process-Outcome model,¹⁴ which tends to focus on characteristics of practitioners, whereas the SEIPS model focuses on how the practitioner is impacted by the specific components of the system in which they work.

A recent demonstration program provided an opportunity to study pharmacy work system factors that act as barriers or facilitators to pharmacists providing CPS. The Wisconsin Pharmacy Quality Collaborative (WPQC) is a consortium of private and public third-party payers, community pharmacies, and the Pharmacy Society of Wisconsin (PSW), the

Wisconsin State Pharmacy Association) that created an incentive-aligned, quality-based CPS demonstration program. Payers pay pharmacists for CPS provided to patients covered by their insurance plans. Payments are made for intervention-based level I services related to drug product selection (eg, changing doses, tablet splitting, formulary interchange, adherence) and patient education such as device instruction. To be reimbursed for most of these CPS, the pharmacist must identify the opportunity and contact the prescriber to change the therapy. Pharmacists also are paid for appointment-based level II MTM services, which include comprehensive medication review (CMR) and medication reconciliation. A typical level II service includes identifying the patient (either from the pharmacy's patient profile or provided by the payer), performing a CMR with a patient, creating and providing a plan for the patient and prescriber, and documenting and billing for the service. A national drug wholesaler developed a web-based software platform to facilitate pharmacist documentation and billing for CPS. A full description of the demonstration project can be found elsewhere.¹⁵

The goals of this study were to identify and describe community pharmacy work system characteristics as important barriers or facilitators to providing CPS in WPQC. Using the SEIPS model as a guiding framework, the investigation focused on (1) characteristics of people in the work system, (2) the tasks that are performed in the work system, (3) the environment of the work system, (4) the tools and technology used in the work system, and (5) the role of the pharmacy organization in the work system.

Methods

A qualitative approach to describing community pharmacy work system characteristics was used. Semistructured interviews were used for data collection. Semistructured interviews are useful when researchers are guided by a specific framework, and flexibility is needed to more completely explore topics and concepts mentioned by an interviewee.

A purposive sample of 6 pharmacy key informants at 6 community pharmacies was selected to interview. The 6 pharmacies were among 24 pharmacies that were participating in the demonstration phase of WPQC. The pharmacies were chosen because they (1) were identified by PSW's Director of Health Care Quality Initiatives as having been successful with documenting and billing both level I and level II WPQC CPS and (2) pharmacists in those pharmacies had made changes to their pharmacy work systems to facilitate providing CPS in WPQC. The key informants were pharmacists who were actively participating in WPQC.

Pharmacy key informants were sent a letter describing the study and requesting their participation. On agreement to participate via a telephone call, a date and place were arranged to conduct the interview. After establishing an interview date, a letter was sent to each key informant thanking them for their participation and containing the interview questions. All key informant pharmacists contacted agreed to participate. This study was approved by the University of Wisconsin Institutional Review Board.

Interviews

The interviews took place during October and November 2008. Five of the interviews were conducted in the key informants' pharmacy office, during regular business hours. One interview was conducted offsite at a restaurant during the lunch hour. All the interviews were approximately 1 hour in length. Two researchers (MAC, DAM) were present at all 6 interviews. In 2 interviews, the key informant invited another pharmacist to participate in the interview: a resident in 1 pharmacy and a staff pharmacist experienced with WPQC CPS in

another pharmacy. These 2 additional pharmacists participated in the interviews and were included in the data analysis of this project.

At the beginning of the interview, the aims of the study were shared with the 8 pharmacists. The researchers attempted to create a nonthreatening atmosphere and set the tone by asking how participation in the WPQC program was progressing (ie, describe how the pharmacy is participating in WPQC). Pharmacists were asked to describe their participation in WPQC, focusing on their successes, problems, and general reaction to the program. This question served as an icebreaker and an opportunity for the key informant to describe the most important aspects of WPQC in the pharmacy. Next, pharmacists were asked to comment on both barriers and facilitators to providing CPS in WPQC that the pharmacy (including all staff) had encountered, guided by the 5 components of the SEIPS model. Each component was discussed individually and sequentially, and examples of aspects of each component were taken from an article describing the model.⁷ As the interview progressed through the questions on the interview guide, the researchers would ask questions to promote understanding of concepts or to promote discussion about topics on the interview guide that were not addressed by the key informant. Pharmacists were encouraged to respond to all issues raised by the researchers but were informed that they had the right not to respond to any issue. The researchers were careful not to bias responses in any way by asking neutral questions and not presenting his/her views on an issue. Each interview was audio recorded using a digital recorder. No additional interviews were conducted after the sixth interview as no new information was obtained.

Thematic analysis

After the 6 interviews were conducted, the audiotapes of each interview were transcribed onto a Microsoft Word file. The interview text was read several times by the 2 pharmacist researchers (MAC, DAM) who conducted the interviews and were joined by an additional researcher (LM) who is not a pharmacist and was not a part of the planning or design of the research project. This investigator triangulation was performed to strengthen and enrich the analysis. Each researcher independently made notes in the margin of the transcript about how statements related to key ideas from the SEIPS model. Next, the 3 researchers met to discuss the interpretations of the statements in the text. Statements referring to a particular theme were grouped and further explored and compared. Once the initial analysis was conducted, the interpretations were discussed among the 3 researchers who conducted the thematic analysis. Agreement was reached on classification of statements into themes after negotiation among the 3 researchers relating to interpretation of the statements and consistency. Interviews were analyzed as a whole, and responses at any time in the interview were classified into themes (ie, responses related to barriers to “task” may have been provided in the introduction to the interview but was classified in the “task” component). Lastly, the themes and statements were placed into corresponding components of the SEIPS model.

For each theme, the number of statements that were identified in the interview transcripts was summed. Also, the number of interviews that contributed statements to each theme was determined.

Results

Six interviews with 8 pharmacists (6 key informants and 2 staff pharmacists) were completed. Overall, the SEIPS model was useful in capturing themes related to important factors within the work system related to providing CPS in WPQC. Importantly, the interview process was able to capture not only changes that were made and facilitators to providing CPS but also how pharmacists problem solved through barriers, personnel issues,

and physical work design constraints. Pharmacists also discussed strategies they used in the past to provide MTM services, and how they revised processes over time to be more effective and efficient. With the exception of the environment component, multiple themes were identified within each SEIPS model component (Table 1).

The next 5 sections describe these components in detail and the themes that were identified within each component, with both research interpretation and verbatim examples of pharmacists' comments.

Component 1: People

In the SEIPS model, people are at the center of the work system. People can include the pharmacist, a technician, other support staff, or patients, depending on the focus of the work system. Examples of characteristics of people that are included in this component include skills and knowledge, motivation, and physical and psychological characteristics. Based on the interview transcripts, pharmacists identified characteristics of pharmacy staff that were important factors in providing CPS in WPQC at their pharmacies, such as communication, time management, psychological characteristics, and training.

Pharmacists recognized that the most important skill needed to participate in WPQC was the ability to communicate and build rapport with both patients and physicians. For example,

“Our patients are very open to a follow-up call. If I explain, ‘I’m the only pharmacist here right now, [and] I’d love to spend the time to talk with you about your meds, would you be willing to wait here or can I call you?’ They know that we’re interested in talking about their meds. They know we’re going to ask questions, see how things are going.”

“We’ve made suggestions [to the physicians] and finally found something [a way to communicate with physicians] that would work. The doctors are pretty receptive to our services. They are used to getting faxes from us with other different programs.”

Pharmacists recognized that time management was a necessary skill to incorporate CPS into their dispensing responsibilities. For example,

“At times because I think, depending on the skill level of the pharmacist and the ability to ... delegate out the things the pharmacist doesn’t need to be doing and focusing on the things that we need to be doing ... If you can’t balance your workday and you’re just coming in filling scripts 9 to 5, you’re not thinking about priorities and not billing a lot of claims. But, if you’re coming in to manage your workday, then I see claims are getting billed.”

Psychological characteristics of pharmacists and technicians, such as role orientation, situation awareness (being aware of what is happening around you), and perseverance also appeared to be important factors. For example,

“I have one technician, Pam, who said ‘I can do this.’ MTM is a similar premise to the way we had to bill compounded drugs. So, because she does compounding, she wanted to be able to bill for what she was doing.”

“Our technicians are very supportive ... When they do have a suggestion, or they see you do this all the time, maybe they can help. They’re not afraid to make suggestions if they see something that could help process-wise.”

Pharmacists also discussed how training impacted their ability to participate in WPQC. Training was characterized in several ways: formal classroom or workshop training, a “train the trainer” method in which those who attended formal training brought back and reviewed

materials with others, and informal training through experience with other CPS that were already being offered in their pharmacy. For example,

“We do want to use the technician for inputting ... data into the ... system. We are waiting for tech training to pop up. I know they’re doing student training on Relay Health right now. We talked to PSW, and they said they are working on tech training. I have two people to send right away.”

Component 2: Tasks

In the SEIPS model, the tasks component describes the content and characteristics of tasks, such as the amount of variety, the challenge and utilization of skills, the level of autonomy and job control, and demands, such as workload, time pressure, cognitive load, and need for attention. Based on the interview transcripts, pharmacists unanimously reported that job content overwhelmingly contributed to their ability to provide CPS in WPQC. Tasks included in this theme include delegating, initiating services, tracking paperwork, data entry, and data mining. For example,

“The technicians are doing everything that they possibly can, and the pharmacists are only doing those things required by law. There’s no reason that we can’t have the tech do all of these things. Here’s all the things that are required [of CPS]. Which ones does the pharmacist actually need to do? We need to see the patient and we need to write up the soap note, and that’s about it. Everything else can be done by someone else.”

“We have paper trails on everything ... A lot of our interventions aren’t done immediately. We’ll send a fax. Then it comes back several days later in another form, and we might not bill for it for another week. We’ll go back through our huge pile of faxes and sort what has and hasn’t been done. We’ll take the stack and see this is a tablet splitting, so we’ll put it in the pile to bill ... We can enter 20 interventions in one day that have actually been done over the course of the week or so.”

Pharmacists spent considerable time discussing the task of scheduling patients for a level II appointment-based intervention. For example,

“Ideally, it’d be nice to say Brian sees patients Monday afternoons and Wednesday mornings, but it won’t always work that way. Patient schedules will be different, and we’ll try to accommodate them as best we can. For people working, it’s tough to get them other than right after work ... Whereas, for a senior population, you can call them to come in, anytime.”

“Scheduling is an issue. We set aside Thursday for this type of stuff, but we have 6 pharmacists, and every pharmacist gets vacation and has sick days ... You get down to four days a month. How do we make it work? ... There’s no way someone can just walk in and you can say, ‘let’s sit down for an hour.’ You have to say, come back in a half hour, but everything [still] gets backed up.”

Pharmacists also discussed how providing CPS in WPQC has increased buy-in and job satisfaction from both pharmacists and technicians. Technicians feel more involved and are used and challenged with new skills and responsibilities. For example,

“[The technicians] here wants to do the interventions ... We actually broadened what they do ... They were very receptive to that. It broadens their horizons, gives them something different to do and increases their job satisfaction. They have taken to it quite a bit and feel like part of the team.”

Pharmacists addressed workload and time pressure concerns as well. The number of and training level of technicians, overall lack of time, and lack of double coverage of pharmacists were discussed. For example,

“When I’m here by myself, I don’t feel like I have any time at all. I’m maxed ... The more you want to do the kinds of things you want to do, the more it can be a barrier ... on a day to day basis. And you have to facilitate that somehow.”

Component 3: Environment

In the SEIPS model, the environment primarily focuses on the physical environment, including workstation design, layout, and noise level. To provide CPS in WPQC, pharmacies were required to have a semiprivate consultation area; however, pharmacists discussed the fact that the mere presence of a consult room was not sufficient. Layout, characteristics, and access to appropriate tools in the consult room were essential for the effective use of such a room. Specifically, pharmacists discussed the need for the consult room to be close to the pick-up window, where patients expect to receive their prescriptions; speak with a pharmacist; have access to a computer to check the patient profile and have access to drug information; have comfortable seating; and have a white board to visually assist with the consultation. For example,

“The private counseling areas are nice, however, when there’s a patient with ambulation issues, they have difficulty getting around that corner and getting in.”

“We have a lot of computers everywhere but there’s no computer in the counseling areas right now ... That is a problem”

“If I’d change anything, I would flip [the dispensing area] around and let this be the consultation room ... Everybody, regardless of [whether they are] dropping something off or picking something up, they come over there. For our workflow to really work, we ask them to come down to the other window. The way they designed it, I feel like it’s a little backwards.”

Component 4: Tools and technology

In the SEIPS model, tools and technology include all electronic and nonelectronic aids. These include various information technologies, such as dispensing computer systems and bar code scanning. In addition to the actual tools and technology, the characteristics and whether the tools and technology are able to be used properly are addressed in this category. Pharmacists discussed many tools that they used to provide CPS in WPQC. Pharmacists identified or created tools to identify possible interventions, track and manage patient data, and communicate with patients and physicians. Both computer systems such as the resident dispensing computer system, the web-based documentation and billing system, and numerous paper and low-tech tools were conceptualized and implemented when the electronic system was unusable or unable to perform the necessary tasks.

Pharmacists reported that the pharmacy dispensing system provided the foundation on which pharmacists mined their databases and ran reports to identify patients. Pharmacists used popup notes or windows available through the dispensing systems to provide reminders to pharmacists about eligible patients when filling a prescription. For example,

“They’ll go through and look at the criteria for diabetes review. Are they on x number of medications from x number of prescribers, and do a review that way. With our dispensing system, we can ... search by any field that we want to and print a report.”

“It would be a great idea to look through all our patients, print out that list of patients and then go through and look and see their medications, what meets the typical MTM criteria of multiple prescribers. Unfortunately, our dispensing software isn’t the best as far as actually putting a flag into the software, the old system was really good. It would put a pop-up screen and force you to see, ‘Oh, this is one of those patients.’”

Pharmacists recognized that to conduct CPS required much more than what their computer systems could provide. Paper tools, such as forms and pocket cards, were creatively implemented. For example,

“My first level II [intervention] took an hour and a half ... The patient went on and on and on, instead of being able to go through more like a nurse would in a clinic. We came up with a [paper] tool that directed that process.”

“One of the tools was a little bag stuffer ... that says why the patient is eligible for the service, what type of insurance they have, and it allows us space to document when the patient might be available, and if we can call them. So we can write down their phone number, when they come in next we have that okay.”

“There’s only one pop-up window [in the computer] so any note we put in there has all the other notes. Eventually, if you have too many, people will start ignoring them. We actually track everything on paper ... It goes in the system alphabetically by name. Then when they call in a prescription, we see the card. Look at the date, okay, it’s been a month since we talked so I’ll go on and mention it again.”

“The technicians toss in a colored card, which are just markers that identify ... like the purple one [indicates] half tablets, cost-savings is green ... They throw those in to alert us.”

Pharmacists reported that the online documentation and billing system were instrumental in providing CPS. The online system electronically provided names of patients to pharmacists (ie, pushed names to the pharmacy) that met criteria for MTM intervention reimbursement. For example,

“What I do is I call everybody on the list that [the online system] sends me and set up appointments on the heavily staffed days ... Out of 14 [services], only 2 of them were identified in the workflow [i.e., 12 identified via the online push]”

Pharmacists had also spent considerable time developing effective tools to market CPS to both patients and physicians. For example,

“We’ve talked about the marketing aspect to try to let [physicians] know what we’re doing and not step on any toes. We put together a cover letter to go out and with each [recommendation]. It tells what WPQC is and why we’re doing it. So that way, they read that, first. We’re not here to do your job but to supplement and help.”

“If we were to contact the prescriber, we actually used Microsoft Word templates. We’ve got a set of templates for medication use ... It’s professional looking ... We use that as a tool for communication with the prescriber.”

Component 5: Organization

In the SEIPS model, organization includes all organizational conditions associated with the work system, including teamwork, supervisory and management styles, rewards and incentives, organizational culture, coordination, and collaboration. Numerous elements of this category were addressed frequently and by the majority of pharmacists. Pharmacists

recognized that overall organization impacted their ability to provide CPS. The themes that pharmacists discussed the most were classified into the following themes: culture, coordination, communication (within the pharmacy staff), and leadership.

The culture of the pharmacy appears to play a large role in a pharmacy's ability to successfully provide CPS. Interviewees made frequent comment about their role orientation, their identity as educators, and their past participation in similar CPS programs, stating, "It's what we do." For example,

"It's so much just the culture here. The expectation is you're here because you want to do these things and want to do more than click, lick, and stick."

"We're at the point to do a lot more things. It is costly, no question. Physically, a new room, and hours around the table, just there are a lot of costs before you see a return. But we need to pursue this avenue."

"It's a key focus of [pharmacy student] training to make sure they understand they have a significant role in making sure that they're ... participating in the billing process for cognitive services of any kind. Our goal is to make sure they're very familiar with how that works."

Pharmacists commented that coordination of tasks and people was essential to being successful in implementing an MTM program. They discussed the need to think about the roles that supportive staff played, how to effectively train them, and how to create specialized roles for both pharmacists and technicians. The ability to match peoples' skill sets with specific tasks contributed to building staff efficacy and managing workflow goals. For example,

"We weren't having any team meetings. I wanted my staff to understand where I was coming from ... Nobody was seeing the whole picture. So we have meeting mixers and ... one of our topics is WPQC update. This is how many claims we have out there; this is what we need to work on."

"We've recognized a need for it. We're still working on identifying the task and who should be working on it."

Strong communication between pharmacy staff was noted as an important element in successfully providing CPS. Pharmacists discussed the fact that good communication was a prerequisite for staff buy-in to initiate new programs because they wanted staff to see the big picture, to provide continued motivation, and for continuous quality improvement of pharmacy CPS and dispensing processes. For example,

"I think I shifted from trying to be one-on-one all the time to educating the whole group. And trying to get team buy-in, and if there's a problem we're gonna talk about it and try to fix them."

"Communication is always a big issue. We hold staff meetings. We shared the philosophy, the new forms, etc ... Everybody knew what the pharmacists would be doing."

The need for leadership and support from pharmacy upper management, either corporate or single owner, could not be overstated by pharmacists. For example,

"I think there's a lot of support. Our company's been great ... We've had support from the top down, which helps quite a bit."

"We're fortunate ... because we have a lot of support from the leadership of our organization. We are all on board ... And they are communicating about it to our

staff members. That helps us out a lot. Support from upper management and their communication is important.”

“They’re showing the effort with providing the time, throughout the month. The biggest thing is to make sure staff is available.”

Discussion

The purpose of this study was to use a work system approach to uncover and describe work system characteristics that pharmacists mentioned as important barriers or facilitators to providing CPS.

The SEIPS model appeared to be a useful framework to use in structuring the interviews with pharmacists about work system factors. The 5 components of the SEIPS model allowed the interviews to explore a comprehensive list of factors that turned out to be important in work system change. Importantly, pharmacists provided valuable and specific information about how they isolated underlying factors that “caused” barriers such as lack of time and how they used structure and process aspects of the work system to find solutions to barriers; however, the SEIPS model typically is used to address 1 work system, without addressing outside forces (ie, influence by patients, prescribers, organization, and health care system structure). Although the SEIPS model clearly comprises 5 distinct components, it recognizes the balance and interconnectivity between components with double-sided arrows between components (Fig. 1). For instance, an intervention to improve one component of the work system may impact another component. For this project, however, facilitators and barriers to work system changes were placed on individual components. Themes and statements that may be associated with the interconnectivity between and among the components were not addressed. Researchers and pharmacists using the SEIPS model should be prepared to see interconnection between the components and understand the nature of the relationships between components of the model. An example could be coordination, task planning, and characteristics of technicians.

The finding that organizational culture was the SEIPS model component with the most statements and was mentioned across all interviews is noteworthy. Ten distinct themes were distilled from the interviews related to this component. Leadership and foresight by the organization to implement processes (communication, coordination, planning, etc.) to facilitate providing CPS were a key finding across the interviews. This result is consistent with studies that found that strong leadership and an organizational culture valuing quality were significant facilitators to implementation of care management processes in physician groups.¹⁶ It was apparent in the present study that organizations represented by key informant pharmacists were oriented to provide CPS in WPQC and identified themselves with the goals of WPQC. Organizational culture may be a key component that sheds light on lack of time identified by pharmacists in previous studies in the sense that planning and coordination are necessary to having enough staff and setting up the system so pharmacists do have enough time to provide CPS. An interesting question for future research is determining the number of pharmacy work systems that have a culture that is oriented in this manner. An issue that arises is how a pharmacy’s organizational culture can be changed in a manner that will facilitate providing CPS in similar programs. Lastly, mechanisms that are most effective at producing organizational change can be explored.

The results related to the task component of the SEIPS model were insightful in terms of understanding solutions to the lack of time barrier cited in previous studies. Pharmacists identified that expanding technician responsibilities was essential to successfully providing CPS. Although the extent of delegation and the tasks assigned to technicians differed between pharmacies, it is clear that all pharmacists had thoughtfully considered how

technicians can best support expanded services. Pharmacists interested in incorporating CPS may need to consider the additional tasks necessary to successfully implement services and determine what tasks technicians can perform and the skills they need to perform them.¹⁷ Additionally, pharmacists may need to consider adding technical staff or creating specialized roles for current technical staff.

It is noteworthy that pharmacists mentioned characteristics of the work system related to all components of the SEIPS model when discussing barriers and facilitators to providing CSP. This finding is contrary to the focus of pharmacist training programs cited in previous articles. Typically, the training programs focus on improving pharmacist skills, knowledge, and confidence in providing CPS. Consistent with previous research, the results of this study suggest that pharmacist training related to clinical issues may be a small part in successful implementation of CPS.³ Training on other skills and competencies such as how to delegate and work as a team with technicians, coordinate defined tasks to individuals best suited to perform them, and problem-solving specific workflow, coordination, and communication issues within their own pharmacy appear to be important skills that should be addressed, possibly in pharmacy school curricula. Nontraditional ways to train pharmacists to provide setting-specific or organization-specific CPS, such as peer mentoring, may need to be implemented and tested to facilitate opportunities for pharmacists to interact with each other to address problems within the work system in which they provide care.

Limitations

This study has several limitations. Pharmacists volunteered for this study and may be more knowledgeable than nonparticipants. Furthermore, pharmacists may have more favorable attitudes toward and be more facile with providing CPS. However, qualitative methods emphasize selecting participants who are conversant with a particular phenomenon, so this may not necessarily be a bias.¹⁸

There may have been some interviewer bias during the thematic analysis because of experience and training, but a third external researcher was included in the thematic analysis to ensure a more neutral approach to the analysis. Also, there may have been some bias related to the structured approach with 5 predefined components; however, participants were encouraged to provide their own examples and interpretations, and they were asked a final, "Is there anything else?" question. Participants were drawn from 1 U.S. state (Wisconsin), and they were successfully participating in 1 specific program, so pharmacists from different regions and participating in other programs may not share the same perceptions and views. Furthermore, pharmacists who may be at the beginning stages of implementing CSP may face different barriers. Future research adopting a work systems approach to examine barriers and facilitators to providing CPS is encouraged to provide convergent validity to our findings.

Conclusions

Numerous factors within a pharmacy work system appear important in enabling pharmacists to provide CPS. To be successful in providing CPS, pharmacists, as well as organizational decision-makers, leaders, and policymakers, must be cognizant of the multidimensional nature of how providing CPS is influenced by different components of the pharmacy work system. Characteristics of the pharmacy organization and increasing the use of technical staff within a pharmacy work system appear to be the most important facilitators of change. Skills related to coordination, communication, and planning related to providing CPS appear to be very important. Future training designed to facilitate pharmacists providing CPS could focus on work system issues rather than solely on clinical knowledge.

Research is needed to better understand work system factors and the details of why barriers exist so that effective strategies can be developed to overcome them. Further analysis of the themes identified could provide a better understanding of work system changes that could be made to facilitate pharmacist role expansion.

Acknowledgments

The authors thank Dr Kari Trapskin from the PSW as well as Drs David Kreling and Beth Martin for their support of this study.

References

1. Herbert KE, Urmie JM, Newland BA, Farris KB. Prediction of pharmacist intention to provide Medicare medication therapy management services using the theory of planned behavior. *Res Social Adm Pharm.* 2006; 2:299–314. [PubMed: 17138516]
2. Law AV, Okamoto MP, Chang PS. Prevalence and types of disease management programs in community pharmacies in California. *J Manag Care Pharm.* 2005; 11:505–512. [PubMed: 15998168]
3. Blake KB, Madhavan SS, Scott V, Meredith Elswick BL. Medication therapy management services in West Virginia: Pharmacists' perceptions of educational and training needs. *Res Social Adm Pharm.* 2009; 5:182–188. [PubMed: 19524865]
4. Blake KB, Madhavan SS. Perceived barriers to provision of medication therapy management services (MTMS) and likelihood of a pharmacist to work in a pharmacy that provides MTMS. *Ann Pharmacother.* 2010; 44:424–431. [PubMed: 20179254]
5. Roberts AS, Benrimoj S, Chen TF, Williams KA, Aslani P. Practice change in community pharmacy: quantification of facilitators. *Ann Pharmacother.* 2008; 42:861–868. [PubMed: 18477730]
6. Roberts AS, Benrimoj S, Chen TF, Williams KA, Hopp TR, Aslani P. Understanding practice change in community pharmacy: a qualitative study in Australia. *Res Social Adm Pharm.* 2005; 1:546–564. [PubMed: 17138495]
7. Hopp TR, Klinke BO, Sorensen EW, Herborg H, Roberts A. Implementation of cognitive pharmaceutical services in Danish community pharmacies—perceptions of strategists and practitioners. *Int J Pharm Pract.* 2006; 14:37–49.
8. Alter S. The work system method for understanding information systems and information systems research. *Commun Assoc Inform Syst.* 2002; 9:90–104.
9. Alter, S. *The Work System Method: Connecting People, Processes, and IT for Business Results.* Larkspur, CA: Work System Press; 2006.
10. Carayon P, Schoofs-Hundt A, Karsh BT, et al. Work system design for patient safety: the SEIPS model. *Qual Saf Health Care.* 2006; 15(suppl 1):i50–i58.
11. Gurses A, Carayon P, Wall M. Impact of performance obstacles on intensive care nurses' workload, perceived quality and safety of care, and quality of working life. *Health Serv Res.* 2008; 44:422–443. [PubMed: 19207589]
12. Gurses AP, Carayon P. Performance obstacles of intensive care nurses. *Nurs Res.* 2007; 56:185–194. [PubMed: 17495574]
13. Carayon P, Schultz K, Hundt AS. Righting wrong site surgery. *Jt Comm J Qual Saf.* 2004; 30:405–410. [PubMed: 15279505]
14. Donabedian A. The quality of care. How can it be assessed? *JAMA.* 1988; 260:1743–1748. [PubMed: 3045356]
15. Trapskin K, Johnson C, Cory P, Sorum S, Decker C. Forging a novel provider and payer partnership in Wisconsin to compensate pharmacists for quality-driven pharmacy and medication therapy management services. *J Am Pharm Assoc.* 2009; 49:642–651.
16. Bodenheimer T, Wang MC, Rundall TG, et al. What are the facilitators and barriers in physician organizations' use of care management processes? *Jt Comm J Qual Saf.* 2004; 30:505–514. [PubMed: 15469128]

17. Schmitt MR, Desselle SP. Pharmacists' perceptions of the value of certification. *J Pharm Technol.* 2010; 26:340–351.
18. Richards, L. *Handling Qualitative Data: A Practical Guide.* London, UK: Sage Publications; 2009.

Fig. 1.
SEIPS model for work system and patient safety.⁷

Table 1

Classification of themes identified in structured interviews

Themes associated with each SEIPS model component	Total statements	Interviews
Person		
1. Pharmacist communication skills (patients and physicians)	15	6
2. Pharmacist time management skills	8	5
3. Pharmacist/technician psychological characteristics (situation awareness and perseverance)	8	6
4. Pharmacist/technician training (formal and on the job)	5	3
Tasks		
1. Job content (actively delegating and initiating service)	23	6
2. Scheduling patients for level II interventions	11	5
3. Challenge and utilization of skills	11	6
4. Time pressure and workload	7	4
Environment		
1. Private consultation room	13	6
Tools and technology		
1. Pharmacy dispensing system	18	5
2. Nonelectronic/paper tools (identifying, tracking, and managing patients)	14	6
3. Relay health ^a	11	5
4. External WPQC communication	6	2
Organization		
1. Culture	41	6
2. Coordination	18	5
3. Communication within the pharmacy	18	4
4. Leadership	18	4
5. Management style	8	4
6. Goal setting	8	4
7. Teamwork	4	3
8. Compensation	4	3

^aThe online documentation and billing tool used in the WPQC program.