Title: Pharmacists’ perceptions of the Pharmacists’ Patient Care Process and performance in a simulated patient interaction

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Abstract

Objectives: To (1) evaluate the use of the PPCP by licensed pharmacists through a simulated patient activity; and (2) describe pharmacists’ awareness and perceptions of the Pharmacists’ Patient Care Process (PPCP) in the state of Arizona.

Design: Interviews were conducted to elicit pharmacists’ perceptions and awareness of the PPCP. A simulated patient activity involved a role-play pharmacist-patient interaction in a community pharmacy setting. The PPCP was employed as the evaluative framework to assess pharmacist behavior.

Setting and participants: Pharmacists licensed in the state of Arizona practicing in various pharmacy settings were recruited through email list-serves and snowball recruitment. Data were collected in-person, telephonically, and via video chat.

Outcome measures: Emergent qualitative themes from interviews were used to describe pharmacists’ awareness and perceptions of the PPCP. The presence/absence of PPCP elements were assessed during the simulations.

Results: Seventeen pharmacists were interviewed; sixteen participated in the simulated activity. Of these, 7 (41.2%) participants recalled specific details regarding the PPCP process. Participants felt the PPCP accurately reflected their daily workflow. Accordingly, a mean of 15.8 of the 19 PPCP elements were observed in simulated pharmacist-patient interactions, still allowing room for improvement in pharmacist-led care planning. Participants indicated perceived value in a shared patient care process that facilitates collaboration with myriad healthcare professionals and as an aid to leverage pharmacists’ role on healthcare teams.

Conclusion: In this study, pharmacists practicing in Arizona in various settings expressed awareness of the PPCP, felt it accurately reflected the work they do, and expressed that the tool potentially added value to their work.
Key Words: Pharmacists’ Patient Care Process, pharmacy practice, patient-centered care, interviews, patient simulation

Key Points

What was already known

• The Pharmacists’ Patient Care Process (PPCP), a multistep patient-centered care process including Collect, Assess, Plan, Implement, and Follow-up elements, was designed as a shared mechanism to standardize care across the profession.

• In 2016, the PPCP was incorporated into the Accreditation Council for Pharmacy Education Standards and has been utilized and evaluated in academic settings since that time.

• Limited inquiry exists into pharmacists’ perceptions of the PPCP and utilization of this multistep process during pharmacist-patient interactions.

What this study adds

• Participating pharmacists expressed awareness of the PPCP, perceived it as adding value to the pharmacy profession, and indicated that the process was reflective of their daily work.

• In a simulated patient activity, pharmacists were observed addressing most of the PPCP elements.

• Opportunities exist for increasing pharmacists’ awareness of the PPCP that may be accomplished via continuing education, certification, and increased PPCP advocacy and promotion.
Abbreviations

CE  Continuing education

PPCP  Pharmacists’ Patient Care Process

SP  Simulated Patient

Background

In recent years, pharmacists’ roles have expanded beyond dispensing medication.1 Pharmacists’ provider status, widening scopes of practice, and integration of pharmacists into interprofessional healthcare teams create opportunities for pharmacists to provide more comprehensive patient care. Pharmacist-delivered care can reduce medication errors and improve patient-related health outcomes, yet further work is warranted to explore perceptions of changing pharmacist duties.1 As the pharmacy profession evolves to include more direct patient care, pharmacists require tools and guidelines to facilitate quality care provision.2 One such tool, is the Pharmacists’ Patient Care Process (PPCP).3

The PPCP, endorsed by The Joint Commission of Pharmacy Practitioners in 2014, provides a framework to guide pharmacists’ interactions with patients for a consistent patient care process. The intent is to expand the pharmacist role from a purely transactional role of dispensing to a more professional, patient-centered, and responsive standard of health care.4,5 The care process is characterized by these elements: (a) collection of necessary subjective and objective information about the patient; (b) assessment of collected information and analysis of the patient’s treatment in the context of their overall health objectives; (c) identification and prioritization of problems; (d) care planning and implementation; (e) and follow-up where the pharmacist monitors and evaluates the effectiveness of the care plan, introducing modification when necessary, in collaboration with other health care professionals (see Figure 1).5,6 The PPCP, incorporated in the 2016 Accreditation Council for Pharmacy Education Standards, is intended to provide standardization to pharmacy practice, by providing a process that any pharmacist can implement for direct patient care services.6,7 However, uptake of the PPCP in pharmacy practice has been slow since its introduction.8,9 While several studies have evaluated
its use in academic settings, few have evaluated the adoption of the PPCP in non-academic (e.g., clinic or community-based) settings. Furthermore, little is known about pharmacists’ perceptions regarding the relevance and value of the PPCP in their daily work.

Objectives

The study objectives were to: (1) evaluate the use of the PPCP by current, licensed pharmacists through a simulated patient activity; and (2) describe Arizona pharmacists’ awareness and perceptions of the PPCP. This study serves to benefit the field of pharmacy practice by describing pharmacists’ perceptions of the PPCP to inform future iterations of the process and efforts to scale-up PPCP implementation.

Methods

This cross-sectional, mixed methods study design concurrently utilized: a simulated patient activity to produce quantitative, observational data on pharmacists’ behavioral performance, in relation to the PPCP and qualitative interviews to elicit pharmacists’ perceptions and self-reported use of the PPCP. This study utilized mixed methods to produce complementary sources of data related to pharmacists’ perceived use of the PPCP, relative to their practical implementation estimated via the simulated patient activity.

Setting and Participants

Recruitment utilized convenience and snowball sampling methods. An email invitation was sent to individuals who completed a previous online pharmacy practice survey and agreed to be contacted for future research purposes. Additionally, the email invitation was distributed to list-serves for University of Arizona Preceptors and the Arizona Pharmacy Association. Respondents were then asked to recruit other pharmacists within their networks to participate, reflecting a snowball recruitment process. Recruitment ceased when the researchers determined data saturation, as evidenced by informational redundancy in the latter interviews. A researcher reflexivity exercise, discussing any new perspectives, was performed at the end of each interview by the researchers (BEL and EJA). As new information decreased and answers
between subjects became increasingly similar, the decision was subjectively made to stop enrolling new participants. Subjects were eligible to participate if they were: practicing pharmacists licensed in Arizona; and had at least one year of pharmacy practice experience. Potential participants were informed that the researchers wanted to learn more about innovative pharmacy practice, including use of quality improvement tools and processes. No mention of the PPCP was made to prevent recruitment of a biased sample of participants who did or did not possess specific knowledge or affinity for the process. Pharmacists who lacked direct patient interaction were excluded. The participants had no prior relationship with the primary investigator (BEL).

Participants were located throughout the state; thus, multiple data collection methods were required to accommodate individual preference and feasibility (e.g., in-person, using technology). Most of the interviews and simulated patient activities, described below, were conducted remotely. Participants joined a digital meeting room from a computer or their telephone. In-person data collection took place in participants’ workplaces.

**Simulated Patient Activity**
A simulated patient activity was used to role-play a typical pharmacist-patient interaction in a community pharmacy setting, using methodology similar to that used by Nusair & Guirguis. Participants were informed of the activity’s purpose to establish a baseline of their normal work processes and patient interactions, not to challenge them or present a complicated patient scenario. Next, the pharmacist was asked to interact with the simulated patient (SP) (role played by a researcher) as they would any new patient. The interaction consisted of three components: prescription drop-off; fill; and final pick-up. The SP presented at the pharmacy to fill a new prescription, the pharmacists received the patient, checked the prescription, and processed the order. During the fill step, pharmacists were asked to ‘think-aloud’ and explain their actions. The ‘think aloud’ protocol or strategy is a type of cognitive or behavioral measure that captures intended actions and thinking processes that may or may not precipitate during direct observation. After the fictitious prescription was filled, the SP returned to pick-up the
prescription and interact with the pharmacist again. The entire simulated activity, including all
pharmacist-patient verbal interactions and the pharmacist’s think-aloud, were audio recorded
for future verification purposes only. Virtual simulations followed the same protocol as in-
person simulations, except for the presentation of props; the simulated patient’s prescription
and patient profile were shared with virtual participants via email prior to the beginning of the
simulation whereas paper-based props were physically handed to the in-person participants
during the simulation. Pharmacists and researchers were aware of the role-playing method. No
deception was used. A standardized script, case scenario, and props (a new prescription and
patient profile) were used to guide the simulated interaction (Appendix 1). Presence or absence
of each PPCP element was recorded for each simulated interaction, via a PPCP-derived
observational checklist (Appendix 2).

Descriptive statistics were used to analyze participants’ demographic data for these variables:
gender; practice setting; board certification; years in practice; and awareness of the PPCP.
Analysis of the pharmacists’ behavior, including their verbal interactions with the simulated
patients, and internal thoughts and actions verbalized during the think-aloud portion, were
compared to the PPCP framework. PPCP elements were recorded for each simulated
interaction (Appendix 2). Count data, representing the proportion of participants addressing
each PPCP element, are presented in tabular format. At conclusion of the simulation,
participants were asked to rate the activity, using a 5-point Likert scale, whereby lower scores
indicated a large discrepancy between normal pharmacist-patient interactions and those
portrayed in the simulated activity and higher scores represented concordance between the
two. A median score was calculated for the ordinal data, representing the sample’s central
tendency for perceived appropriateness of the data collection method itself.17,18

Interviews
Semi-structured interviews were conducted immediately following the simulated patient
activity, using a set of predetermined interview questions and additional probing questions to
elicit more in-depth information regarding the participant’s specific experiences when
warranted. Interview questions are provided in Appendix 3. An interview guide, designed specifically for this project, was piloted prior to study enrollment to assess clarity, predict any logistical issues related to delivery, and determine appropriateness of language and complexity for the target audience. Piloting and interviews were conducted by two researchers (BEL and EJA) who had prior training in qualitative interview methods. Interviews ranged from 30 to 60 minutes each. They were audio-recorded and transcribed for verification purposes only. Thematic analysis was conducted to identify key emergent themes from the interviews.\textsuperscript{19} Three researchers (BEL, EJA, and LVZ) independently identified themes. Then, themes were compared and discussed among the researchers until consensus was reached. Direct quotes were pulled from transcripts to support key qualitative findings and are presented in the results section.

This study was approved by the University of Arizona Institutional Review Board. This study is reported in accordance with Consolidated Criteria for Reporting Qualitative Research (COREQ) and the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines for interviews and observational studies, respectively.\textsuperscript{20,21}

**Results**

Sixteen pharmacists participated in the simulated patient activity; two pharmacists were excluded as they had no direct patient interactions (e.g., consultant pharmacist, limited to unconscious patients only). Simulated interaction participants were: mostly female (n=12, 75%); practiced in ambulatory care settings such as outpatient clinics (n=13, 81.3%); and were Board Certified Pharmacotherapy Specialists (n=6, 37.5%), Board Certified in Ambulatory Care (n=6, 37.5%), or held no Board Certifications (n=5, 31.25%). Eighteen pharmacists participated in the interviews conducted between April and May 2019; the final sample included 17 interviews; one interview was excluded as anonymity could have been jeopardized given the unique characteristics of the participant’s practice setting. Interview participants were mostly female (n=13, 76.5%) and one pharmacist was board-certified in geriatric pharmacy.

Participant characteristics are presented in Table 1.
Simulated Patient Activity

Of 19 PPCP elements on the observational checklist used to evaluate pharmacists’ performance in the simulated interaction, participants addressed an average of 15.8. The frequency with which participants addressed each element are reported in Table 2. All pharmacists correctly addressed elements of indication, evaluation, and safety during the pharmacotherapy workup. Several elements were more likely to be missed such as: identifying therapy goals (37.5% missed, n=6); and determining interventions with patients such as asking what their goal blood pressure was or if they have an arm cuff to monitor their blood pressure at home (31.3% missed, n=5). When asked how well the simulated activity represented a normal pharmacist-patient interaction, two-thirds of participants rated the activity as 4 or 5 out of 5, indicating they felt the simulation was somewhat or very reflective of typical interactions (Table 3). They felt it was realistic, yet they may have less time with an actual patient in practice due to other job responsibilities and real patients may be less engaged than the simulated patient, limiting the pharmacists’ ability to provide comprehensive encounters.

Semi-structured Interview

Awareness of the PPCP

When asked if they were familiar with the Pharmacists’ Patient Care Process, most interview participants reported some awareness and recalled information when prompted (n=7, 41.2%) or indicated previously hearing about the PPCP but were unable to recall specific details (n=7, 41.2%). Several were unsure or had no previous exposure (n=3, 17.6%). During recall, participants indicated they knew the PPCP was often depicted as a wheel, that it had five steps, that the patient was at the center of the wheel and the process, and that it is commonly incorporated in pharmacy school curricula. One participant succinctly described the rationale behind creation of the PPCP as “an attempt to standardize the way pharmacists and providers are evaluating and treating patients”.

After a short description of the PPCP provided by the researchers, participants indicated that they had positive attitudes toward it and thought it gave structure and shared terminology to
the work they were already doing. The most common sentiment shared between all of the
interviewees was that the PPCP is reflective of a pharmacist’s normal work, how they always
strive to provide patient care, even if they do not explicitly utilize any framework or set steps to
guide their interactions.

“We do all of those things every day, on a daily basis.” – Participant 1

“To be honest, I feel like it’s mostly what pharmacists are doing already…
It’s just part of the inherent nature of the practice setting… Now, there’s specific terms that are
placed to it… From our perspective, we’re doing this.” – Participant 10

“We just don’t really call it that. I mean, we do patient information,
then we make a plan and do a follow-up.” – Participant 16

Purpose of the PPCP
Participants elaborated by saying they may use alternative but similar concepts to guide their
work, including: 5 Rights of Medication Administration,22 Medication Therapy Management
(MTM),23 Achieving Medication Therapy Management Consensus,24 Plan-Do-Study-Act (PDSA)25
and Quickly Establish Suggest Talk (QuEST)/Symptoms, Characteristics, History, Onset, Location,
Aggravating factors and Remitting factors (SCHOLAR) or SCHOLAR Medications and other
products patient is taking, Allergies, Coexisting Conditions (MAC).26 The aforementioned tools
serve as guides to help facilitate discussions with patients regarding their medications and
other therapies. Participants saw the PPCP as another tool, with slightly different verbiage, but
similar purpose to ensure “pharmacists don’t skip steps”.

“I think it helps remind you that there’s a process that you should think about… We’re collecting
data from the patient, we’re analyzing data from that patient, we’re implementing our plan,
and we’re following up. Making sure we’re following all those processes, I think, is beneficial.” –
Participant 1
Other participants recognized the PPCP as a quality improvement tool, an “opportunity to really self-assess”. With well-defined steps in the process, pharmacists perceived how the PPCP could facilitate individual introspection of their own work and external evaluation.

“If we’re not coming back and closing up that loop in terms of following-up by monitoring and evaluating if a therapy was effective, I feel like that’s a big point where the pharmacist can see ‘was my intervention effective?’... I think that’s probably where I see the most benefit, is providing you with information in terms of moving you forward in caring for future patients.” – Participant 3

Pharmacists conceptualized the PPCP as facilitating interprofessional collaboration with other healthcare practitioners, giving them a shared patient care process, and serving as a tool to communicate the pharmacists’ role in patient care. Some felt that the PPCP lent legitimacy to the pharmacy profession, by demonstrating a robust range of activities pharmacists can perform. They also saw the PPCP as driving a larger trend in pharmacy practice, steering the profession away from transactional dispensing of medications toward a more comprehensive patient-centered care model. Several respondents liked the PPCP figure’s depiction of the patient at the center of the process.

“The patient is the center, and sometimes... it's easy to forget. Some of those even social determinants of health need to be addressed first. Like do I need to get them [the patient] help with a social worker? Because right now it's hard for them to control their diabetes because they don't have access to food. So just I guess keeping in mind that they are guiding the course for our visit, and to respect that autonomy. I think especially having that in the diagram talking about, yes it's the patient that is also a part of that process too, is really important.” – Participant 17
“It’s good to have something standardized like this that is pushing pharmacists towards more clinical thoughts, regardless of their work environment. So I think it’s a valuable thing because it’s more thoughtful in the way that we should be doing clinical things instead of just transactional things.” – Participant 15

“Moving pharmacy more away from the product and more into you know adherence... health and wellness... to get the patient the health that they need.” – Participant 4

Relevance Across Settings

While most participants practiced in more often in settings such as ambulatory care rather than community pharmacy, many had previous experience in other settings and were able to discuss how the PPCP might apply. Most individuals thought the framework was relevant across settings while the patient care process may be modified or abbreviated to account for setting differences. A few participants expressed that, of all pharmacy practice settings, community pharmacists may have the most difficult time implementing the PPCP due to a perceived lack of time with each patient, competing work tasks, and lack of access to patient information, which may especially impede the follow-up portion of patient care.

“I feel like it will be relevant everywhere, it’ll just be more in-depth in areas due to time and access to patient information.” – Participant 15

While we did not specifically ask participants, many revealed that they serve as preceptors, working directly with pharmacy students. These participants were typically more familiar with the PPCP since it is formally taught in pharmacy curriculum and schools have provided local continuing education on the topic. Participants indicated that they value the PPCP as an educational tool that extends beyond the classroom. It helped bridge theoretical concepts to practice during rotation and was subsequently internalized as part of lifelong learning. Thus, PPCP adoption in academic settings was perceived as a good practice in and of itself. It was also
seen as an entry point for incorporation of the framework into pharmacy practice, since students would take it “forward into practice.”

“I say it has value because, I mean, it’s how I practice and how I want to teach my residents and students to practice.” – Participant 16

Discussion

Most pharmacists in this study had some previous exposure to the PPCP, although they may not have been able to recall specifics about it, and felt the process represented the work they do every day. This assertion was supported as the pharmacists performed well when their simulated patient interactions were scored against the PPCP framework. Using the PPCP as an evaluative tool in this study revealed specific areas for practice improvement, such as identifying therapy goals and determining interventions. The practicality of using the PPCP as an evaluative checklist, as demonstrated by using it to score the simulated patient interactions, as well as the perceived opportunity for pharmacist self-reflection to improve monitoring and evaluation of the care process speak to the PPCP’s usefulness as a quality improvement instrument. Pharmacists also recognized the PPCP its value in checking steps of patient interactions, training students, expanding collaborative practice, and promoting patient-centered care. Limited extant literature supports the PPCP’s use as a reminder tool, primarily in educational settings, thus, the current study adds a relatively novel finding regarding the potential value of the PPCP for pharmacists in their places of practice.

The “wheel” (the diagrammatic depiction of the PPCP) was an effective way to visually present the process. When asked about the PPCP by name, pharmacists were hesitant to state their familiarity or lack thereof with the process. When the wheel was described, it prompted responses like “Oh yeah, I’ve seen that.” While pharmacists recognized the need for standardization of terms and a care process across the field of pharmacy, they failed to perceive the innovation of the PPCP and questioned how it differed from similar tools. This feedback may provide important information for the Joint Commission of Pharmacy
Practitioners in tailoring new marketing and messaging about the PPCP. Specific questions that may necessitate addressing include: (a) Is it a care process that integrates terms and elements from other sources to make the PPCP all-encompassing?; or (b) are there key differences between the PPCP and other pharmacy practice innovations that can be clearly communicated, while asserting the PPCP as a preferred tool?

While most previous studies regarding the PPCP have been conducted in educational settings, especially with PharmD students, more research is warranted evaluating its implementation in diverse pharmacy practice settings. The pharmacists who participated in this study thought the PPCP would maintain relevance across pharmacy practice settings yet expressed some concern that community pharmacists may face additional barriers to its full implementation compared to other practice settings, given time constraints, competing work tasks, and limited access to patient medical records. Despite their concerns, participants effectively and unknowingly implemented the PPCP during the community pharmacy-based simulation activity. High PPCP scores observed during the simulation, even by participants with presumably limited community pharmacy exposure (mostly ambulatory care pharmacists), showed that PPCP utilization is achievable in such a setting. It is feasible to surmise that community pharmacists may likely score even higher when participating in a simulation that is more reflective of their everyday work environment. Further research is needed to describe community pharmacists’ perceptions and evaluate the PPCP use in community pharmacy settings.

There was wide variability in the degree that pharmacists appropriately addressed individual PPCP elements. For example, some participants asked the simulated patient if they “had any additional questions” while others took the opportunity to counsel the patient regarding their personal concerns. Nuances such as use of non-specific questions and different communication styles during a simulated patient activity have been described previously. The current pharmacists performed well on pharmacotherapy workup but poorer on creating and communicating a care plan to patients, compared to chain community pharmacists in Canada.
The variable perceived utility of the PPCP in community pharmacy versus other settings may indicate a need for different emphasis in PPCP training based on learners’ practice site.

As recognition of the PPCP grows in pharmacy practice, the pharmacists in this study indicated they would like to see additional steps taken to facilitate adoption of the process in practice. More specifically, large-scale approaches to PPCP implementation remove the onus on individuals to fit it into their own workflow. Adoption of the PPCP as an accreditation standard was lauded by participants as a policy approach to formalizing and institutionalizing the process in educational programs, yet they expressed wanting to see further action outside of formal education. State boards and commissions may look for ways to institutionalize the PPCP, including certification and creation of practical continuing education (CE), to promote widespread awareness and implementation. Participants stated they would be motivated to use the PPCP if it was incentivized in such a way. In an educational setting, Cooley and Lee described ways to utilize the PPCP in assessment rubrics, to design co-curricular and experiential education activities like immunization clinics, and in examination software coding. Other ways to institutionalize the PPCP on small and large scales, are in workplace evaluation metrics and rubrics, coded into digital patient care systems, and during pharmacists’ periodic evaluations.

Future research is warranted to describe process and patient outcomes among pharmacists actively using the PPCP versus those who do not. To this end, one study found that students who had PPCP incorporated into coursework were significantly better at identifying potential and actual drug therapy problems versus students without the PPCP training. Evidence of the PPCP’s impact on measurable outcomes can demonstrate its importance and improve uptake. In the current study, participants stated that having a generalized and shared model of patient care allowed them to communicate the pharmacists’ role and worth to non-pharmacist care providers, leveraging their position in collaborative working relationships. Finally, investigating non-pharmacist health professionals’ perceptions of the PPCP may provide valuable information regarding its integration into practice.
Limitations

The small sample of pharmacists from one U.S. state (Arizona) limits the transferability of these findings. Additionally, recruitment methods utilizing a preceptor list-serve and snow-ball sampling that ultimately resulted in non-representative sampling. Preceptors and academics were more likely to have encountered the PPCP in their work with students than other practicing pharmacists. However, to minimize selection bias (e.g., self-selection to participate given interest in topic area) no reference to the PPCP was made during recruitment. Only one of the participants practiced in a community pharmacy, although the 43% of US pharmacists practice in such settings, further limiting the transferability of these findings. Additionally, the participants in this sample collectively held a large number of advanced pharmacy certifications, requiring lifelong learning to maintain these certifications. Use of a more representative sampling strategy may have resulted in very different findings; however, the small, overall sample size precluded stratification by practice site or participant characteristics.

Using a virtual, simulated patient activity provided an opportunity to engage with pharmacists across a wide geographic area yet, our observations were limited to verbal information only; non-verbal cues were not observable. Simulated patient interactions between a pharmacist and a researcher (assuming the role of a patient) are likely to differ from actual patient interactions. The potential for social desirability bias, whereby pharmacists performed the way they were “expected” to, may have been present even though pharmacists were not informed in advance on how they were being evaluated (e.g., PPCP). Although participants were role playing an interaction in a pharmacy setting in which they do not normally work, they reported concordance between normal pharmacist-patient interactions and the role-play activity.

Conclusion

Pharmacists in this mixed methods study felt the Pharmacists’ Patient Care Process (PPCP) reflected their normal work, although they may not explicitly use the same terminology to
describe their care process and may have varying awareness of the steps. In a simulated patient interaction, participants successfully addressed most of the PPCP steps, with fewer pharmacists engaging in patient care plan-related communication. The PPCP was valued as an educational tool and a reminder or quality improvement tool. Uptake of PPCP implementation may be improved via continuing education, certification, and institutional adoption in training and evaluation materials.
Reference


Figure 1. The Pharmacists’ Patient Care Process

Pharmacists’ Patient Care Process

Pharmacists use a patient-centered approach in collaboration with other providers on the health care team to optimize patient health and medication outcomes.

Using principles of evidence-based practice, pharmacists:

Collect
The pharmacist assures the collection of the necessary subjective and objective information about the patient in order to understand the relevant medical, medication history and clinical status of the patient.

Assess
The pharmacist assesses the information collected and analyzes the clinical effects of the patient's therapy in the context of the patient's overall health goals in order to identify and prioritize problems and achieve optimal care.

Plan
The pharmacist develops an individualized patient-centered care plan, in collaboration with other health care professionals and the patient or caregiver that is evidence-based and cost-effective.

Implement
The pharmacist implements the care plan in collaboration with other health care professionals and the patient or caregiver.

Follow-up: Monitor and Evaluate
The pharmacist monitors and evaluates the effectiveness of the care plan and modifies the plan in collaboration with other health care professionals and the patient or caregiver as needed.


Source: Reproduced with the permission of the Joint Commission of Pharmacy Practitioners6
<table>
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<th>Participant characteristic</th>
<th>Interview participants (n=17)</th>
<th>Simulated activity participants (n=16)</th>
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<tr>
<td>No board certification</td>
<td>5 (29.4)</td>
<td>5 (31.3)</td>
</tr>
<tr>
<td>Current practice site</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ambulatory care facility</td>
<td>14 (82.4)</td>
<td>13 (81.3)</td>
</tr>
<tr>
<td>Community/retail pharmacy</td>
<td>1 (5.9)</td>
<td>1 (6.3)</td>
</tr>
<tr>
<td>Other</td>
<td>2 (11.8)</td>
<td>2 (12.5)</td>
</tr>
<tr>
<td>Academic affiliation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>8 (47.1)</td>
<td>7 (43.8)</td>
</tr>
<tr>
<td>No</td>
<td>9 (52.9)</td>
<td>9 (56.3)</td>
</tr>
<tr>
<td>Have heard of the PPCP</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes, able to recall information about PPCP</td>
<td>7 (41.2)</td>
<td>-</td>
</tr>
<tr>
<td>Yes, not able to recall specifics of PPCP</td>
<td>7 (41.2)</td>
<td>-</td>
</tr>
<tr>
<td>No/not sure</td>
<td>3 (17.6)</td>
<td>-</td>
</tr>
</tbody>
</table>

Note: values may not equal 100% due to rounding.

* Multiple board certifications may be held by an individual

** Added qualification (AQ) is a Board of Pharmacy Specialties recognition of advanced training and experience in a pharmaco-therapy specialty. Added qualifications exist in Cardiology and Infectious Diseases.
Table 2. Frequencies of pharmacist participants addressing elements of the Pharmacists' Patient Care Process (PPCP) in a simulated patient activity

<table>
<thead>
<tr>
<th>PPCP Element</th>
<th>Drop-off</th>
<th>Think-aloud</th>
<th>Pick-up</th>
<th>Total (%) (n=16)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Assess &amp; Collect</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meeting the patient</td>
<td>10</td>
<td>0</td>
<td>10</td>
<td>13 (81.3)</td>
</tr>
<tr>
<td>Eliciting information from the Patient</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reason for the encounter</td>
<td>11</td>
<td>0</td>
<td>4</td>
<td>12 (75.0)</td>
</tr>
<tr>
<td>Patient demographics</td>
<td>9</td>
<td>4</td>
<td>2</td>
<td>11 (68.8)</td>
</tr>
<tr>
<td>Understanding the patient’s medication experience</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patient concerns and needs</td>
<td>7</td>
<td>1</td>
<td>12</td>
<td>15 (93.8)</td>
</tr>
<tr>
<td>Past and current medication history</td>
<td>13</td>
<td>5</td>
<td>5</td>
<td>15 (93.8)</td>
</tr>
<tr>
<td>Clinical information</td>
<td>10</td>
<td>8</td>
<td>5</td>
<td>16 (100.0)</td>
</tr>
<tr>
<td>Pharmacotherapy work-up</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indication</td>
<td>4</td>
<td>15</td>
<td>8</td>
<td>16 (100.0)</td>
</tr>
<tr>
<td>Effectiveness</td>
<td>2</td>
<td>14</td>
<td>9</td>
<td>16 (100.0)</td>
</tr>
<tr>
<td>Safety</td>
<td>2</td>
<td>15</td>
<td>8</td>
<td>16 (100.0)</td>
</tr>
<tr>
<td>Manageability</td>
<td>3</td>
<td>5</td>
<td>12</td>
<td>14 (87.5)</td>
</tr>
<tr>
<td><strong>Care Plan: Plan &amp; Implement</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Goals of therapy and desired outcomes</td>
<td>1</td>
<td>5</td>
<td>6</td>
<td>10 (62.5)</td>
</tr>
<tr>
<td>Determine interventions</td>
<td>2</td>
<td>3</td>
<td>8</td>
<td>11 (68.8)</td>
</tr>
<tr>
<td>Patient education and empowerment</td>
<td>3</td>
<td>2</td>
<td>10</td>
<td>12 (75.0)</td>
</tr>
<tr>
<td>Coordination of care</td>
<td>3</td>
<td>5</td>
<td>12</td>
<td>15 (93.8)</td>
</tr>
<tr>
<td>Schedule a follow-up</td>
<td>1</td>
<td>3</td>
<td>10</td>
<td>12 (75.0)</td>
</tr>
<tr>
<td><strong>Follow-up: Monitor &amp; Evaluate</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Follow up to evaluate effectiveness</td>
<td>1</td>
<td>2</td>
<td>11</td>
<td>13 (81.3)</td>
</tr>
<tr>
<td>Follow up to evaluate safety</td>
<td>1</td>
<td>3</td>
<td>11</td>
<td>13 (81.3)</td>
</tr>
<tr>
<td>Task</td>
<td>Count 1</td>
<td>Count 2</td>
<td>Count 3</td>
<td>Total Percentage</td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>---------</td>
<td>---------</td>
<td>---------</td>
<td>------------------</td>
</tr>
<tr>
<td>Assess any new problem, make changes as</td>
<td>0</td>
<td>0</td>
<td>10</td>
<td>10 (62.5)</td>
</tr>
<tr>
<td>needed</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provide continuous care</td>
<td>0</td>
<td>4</td>
<td>10</td>
<td>13 (81.3)</td>
</tr>
<tr>
<td>Average number of elements addressed overall</td>
<td></td>
<td></td>
<td></td>
<td>15.8/19</td>
</tr>
</tbody>
</table>

*Note: The values in the total column are not generated by adding the values from the other columns. A PPCP element may be present in multiple stages of a given simulated interaction, for example during drop-off and pick-up of the prescription, but is only counted once for the entire interaction in the total column.*
Table 3. Pharmacists’ perceived accuracy of simulated patient activity to reflect a normal pharmacist-patient interaction

<table>
<thead>
<tr>
<th>How well did this activity reflect a normal pharmacist-patient interaction?</th>
<th>1 Not at all</th>
<th>2 Not very much</th>
<th>3 Neutral</th>
<th>4 Somewhat</th>
<th>5 Very well</th>
<th>No response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of pharmacists</td>
<td>0</td>
<td>3</td>
<td>2</td>
<td>4</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>Median score</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4/5</td>
</tr>
</tbody>
</table>
Appendix 1. Simulated patient activity supporting documents

Case summary
Simulated Patient (SP) has just been prescribed candesartan 16 mg (ARB) for her hypertension by her family physician. SP was on ramipril 10 mg before and her doctor switched her to ARB due to a dry cough caused by ramipril. SP is not sure if the new medication will cause the same problem or not and she is hesitant to take it. SP is insured and has good medication adherence.

Patient profile, provided to pharmacist
Patient Name: Cheryl Smith
Address: 1234 Martin Ave., Tucson, AZ 85721
Phone #: 520-555-4321
DOB: 02-12-1960
Known Diseases: Hypertension, hyperlipidemia
Allergies: None

<table>
<thead>
<tr>
<th>Date of Last Fill</th>
<th>Medication Name</th>
<th>Strength</th>
<th>Quantity</th>
<th>Refills</th>
<th>Directions</th>
<th>Prescriber</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-7-19</td>
<td>ramipril</td>
<td>10 mg</td>
<td>30</td>
<td>4</td>
<td>1 tab po daily</td>
<td>Schultz</td>
</tr>
</tbody>
</table>

Prescription prop

FOR Cheryl Smith, DOB 02/12/1960 DATE 3/1/2019

ADDRESS _____________________________

Rx

Candesartan 16mg
1 tab PO daily
Disp #30 (thirty)

Refills 11

Dr. Anne Schultz

SUBSTITUTION PERMITTED

Dispense as Written

DEA NO.

Reorder item #6106

Total Pharmacy Supply, Inc. 1-800-878-2822
### Appendix 2. Pharmacists’ Patient Care Process observational checklist for scoring of simulated interactions

<table>
<thead>
<tr>
<th>PPCP Element</th>
<th>Definition</th>
<th>Drop-off</th>
<th>Concurrent think-aloud</th>
<th>Pick-up</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Assessment</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meeting the patient</td>
<td>Instances that refer to pharmacists introducing themselves, or greeting the patient.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eliciting information from the patient</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reason for the encounter</td>
<td>This code refers to patient’s primary reason for going to the pharmacy or seeking help. This could be achieved by asking the patient to tell their story.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>e.g., “what can I do for you today”</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patient demographics</td>
<td>Instances that refer to patient’s age, gender, address, contact info, and living situation (e.g., insurance).</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>e.g. “Alright, I just need to verify identification and birth date November 9, 1983?”</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Understanding the patient’s medication experience</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patient concerns and needs</td>
<td>Instances that refer to pharmacists gathering information from patient to assess what they understand about their current therapy, needs, concerns.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>e.g. “do you have any question about your medication?”</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Past and current medication history</td>
<td>Instances that refer to pharmacists gathering information from patient about current or past medications, over the counter and herbal, reason for taking them, directions,</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
allergies, and adverse drug reactions. This code also social drug use (e.g., tobacco, alcohol).
e.g. “have you had any heart medication before or blood pressure medication before in the past?”
e.g. “did the doctor tell you much about your medication at all”

Clinical information
Instances that refer to pharmacists gathering information from patient past and current medical history, vital signs (e.g., blood pressure), and lab tests.
e.g. “did he tell you what your blood pressure is”

Pharmacotherapy workup
Instances that refer to pharmacists making an assessment of the pharmacotherapy workup elements in the consultations or think-aloud sessions. This code differs from eliciting information codes in 1.2.

Indication
Instances that refer to pharmacists making an assessment if the medication is indicated for the medical condition and/or the patient, or if the pharmacists have any doubts about the medication. This may also include checking for unnecessary drug therapy (e.g., duplicate therapy or no medical indication)
e.g. “so this to help to reduce your blood pressure and replace your Altace”

Effectiveness
Effectiveness (PTW_E): Instances that refer to pharmacists making an assessment if the medication is going to be effective, or if the dose is effective for the medical condition it was prescribed for. Effectiveness in our simulated case can also be evaluated by assessing how Ramipril has been
working for the patient since the patient is switching from Ramipril to Candesartan
e.g. “so you should have similar effects in terms of blood pressure lowering results”

Safety

Instances that refer to pharmacists making an assessment is going to be safe for the patient. This may include evaluating allergies to prescribed medication, contraindications, drug-drug or Drug disease interactions, misuse, safe dose or overdose.
e.g. “because it is new I will always look for any drug interactions and just to make sure everything is going okay for you”

Manageability

Instances that refer to pharmacists making an assessment use/adherence to therapy, this may include: a) evaluating if the patient is willing to take the correct dosage or following instructions for taking the medication in question, and b) evaluating patient’s understanding or preference for instructions and directions to take their medication
e.g. “so I would recommend just keeping it at the same time as the Altace that you have been taking before, so just one tablet once a day in the morning. It does not matter if it is before eating or after eating. There is no restriction on any diet or anything like that. Okay?”

Care Plan
Goals of therapy and desired outcome
Instances that refer to a discussion of the goal of therapy, positive outcomes, resolve drug related problem, reduction of symptoms. In this case we expect a discussion related to blood pressure control and resolve cough.
e.g. “So hopefully when you start to take this, you won’t ... the cough will go away. It might take a little while, it won't be instantaneous but I would say, you know, hopefully you'll notice a difference

Determine interventions
Instances that refer to a discussion of an intervention to a) resolve and prevent DRP, and b) achieve goals including; patient education, a monitoring plan
e.g. “but if you experience any of that, monitor your blood pressure”
e.g. “I want to make sure that you keep monitoring your blood pressure more frequently the next week or two”

Schedule a follow-up
Instances that refer to one of the following: when should the follow up evaluation be scheduled to evaluate appropriateness of therapy.
e.g. “I will call you in about a week's time and then we will just touch base and make sure that everything is going as planned”

Follow up Evaluation
Follow up to evaluate effectiveness
Instances that make reference to evaluating effectiveness of care plan in the next follow up.
| Follow up to evaluate safety | Instances that make reference to making reference to evaluating safety of care plan in the next follow up.  
| e.g. “so then if it seems to be not a problem, then the next time you have it filled you can complete the rest of the prescription so you can have the other 60 filled” |
|-----------------------------|----------------------------------------------------------------------------------------------------------|
| Assess any new problem and make changes to care plan | Instances that make reference to making to assessing any new possible drug-related problem on the next follow up and make changes to care plan accordingly.  
| e.g. “then definitely let the doctor or myself know as well, it might be that the dose of the medication is a little bit high and we might have to adjust the medication” |
| Provide continuous care | Instances that make reference to inviting the patient to contact pharmacist at any time not necessarily on the next refill or follow up.  
| e.g. “well feel free to contact me, I am available in the pharmacy the phone is right on the label there so if you have any questions or concerns feel free to contact us” |
Appendix 3. Interview Questions about the Pharmacists’ Patient Care Process

1) Have you heard of something called the Pharmacists’ Patient Care Process?
   If yes...
   o What do you know about it?
   o How did you first learn about the PPCP?
   o Since then, have you seen it anywhere else or received additional training on the PPCP?

[Researcher provides a brief statement about the PPCP to all participants before proceeding.]

For participants who answered no to Question 1...
   o Now that know what the PPCP is, do you think you may have heard about it before?

2) Do you practice using the PPCP?
   o Why or why not?

   If yes...
   o When did you start using this process?
   o How are you using the PPCP?
   o How has it changed the way you work?

   If no...
   o Do you think that the PPCP could be useful to your work? How?
   o Are there barriers that make it difficult for you to use the PPCP?

3) Do you think the PPCP is valuable for the profession of pharmacy?
   o Why or why not?
   o Describe what you see as the value of the PPCP.

4) Do you find the PPCP valuable for you personally, as a Pharmacist? Explain.

5) Do you teach, precept, or mentor students?
   If yes...
   o Do you use the PPCP with your students? Explain.

6) Some folks think the PPCP is most valuable as an education tool and may not be as applicable to pharmacy practice in everyday life. What are your thoughts on that?