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Trained student pharmacists' telephonic collection of patient medication information: Evaluation of a structured interview tool

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Abstract

Objective—To determine the feasibility and fidelity of student pharmacists collecting patient medication list information using a structured interview tool and the accuracy of documenting the information. The medication lists were used by a community pharmacist to provide a targeted medication therapy management (MTM) intervention.

Design—Descriptive analysis of patient medication lists collected via telephone interviews.

Participants—10 trained student pharmacists collected the medication lists.

Intervention—Trained student pharmacists conducted audio-recorded telephone interviews with 80 English-speaking community dwelling older adults using a structured interview tool to collect and document medication lists.

Main outcome measures—Feasibility was measured using the number of completed interviews, the time student pharmacists took to collect the information, and pharmacist feedback. Fidelity to the interview tool was measured by assessing student pharmacists' adherence to asking all scripted questions and probes. Accuracy was measured by comparing the audio recorded interviews to the medication list information documented in an electronic medical record.

Results—On average it took student pharmacists 26.7 minutes to collect the medication lists. The community pharmacist said the medication lists were complete and that having the medication lists saved time and allowed him to focus on assessment, recommendations, and education during the targeted MTM session. Fidelity was high with an overall proportion of asked scripted probes of 83.75% (95%CI: 80.62–86.88%). Accuracy was also high for both prescription (95.1%, 95%CI: 94.3–95.8%) and non-prescription (90.5%, 95%CI: 89.4–91.4%) medications.

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The preliminary results of this project were presented as a poster at the American Pharmacists Association Annual Meeting March 2013 in Los Angeles, California.

Conclusion—Trained student pharmacists were able to use an interview tool to collect and document medication lists with a high degree of fidelity and accuracy. This study suggests that student pharmacists or trained technicians may be able to collect patient medication lists to facilitate MTM sessions in the community pharmacy setting. Evaluating the sustainability of using student pharmacists or trained technicians to collect medication lists is needed.

Keywords

Medication list; Medication therapy management; student pharmacist; medication review; telepharmacy; community pharmacy; fidelity

Introduction

As the role of the community pharmacist continues to shift from a dispenser of medications to a provider of care services, streamlining some technical aspects of medication therapy management (MTM), such as gathering patient medication lists, is important to sustain a successful pharmacy MTM service.¹ In order to provide a comprehensive medication review during an MTM session, a pharmacist must have a complete, up-to-date and accurate medication list, including over-the-counter (OTC) and herbal products available to review for drug-drug interactions and adverse effects.^{2–4} However, a comprehensive medication list that accurately portrays medications the patient is taking is not always available to the community pharmacist.⁵ Over-the-counter and herbal products are often not included in existing medication lists. Additionally, pharmacy profiles may not reflect how the patient is actually taking the medication or may miss medications if multiple pharmacies are used.

Pharmacists excel at collecting medication lists and performing comprehensive medication reviews, however, it is time consuming and costly to have pharmacists collect the medication list.^{3,6,7} Collecting a comprehensive medication list takes a pharmacist an average of 21.9 minutes.⁸ This means in a one-hour appointment, as much as one-third of the time allotted may be spent collecting medication lists. Although outpatient pharmacies often have medication lists, the lists frequently contain errors.⁵ One evaluation determined that only 25% of the outpatient pharmacy medication lists evaluated were completely accurate.⁵

Having the medication list collected and documented by non-pharmacist personnel, such as student pharmacists or trained technicians, prior to the patient-pharmacist interaction could save pharmacists' time while generating accurate medication lists. Also, allocating time for medication list collection separate from the MTM session may reduce patient burden associated with a potentially longer face-to-face MTM session. Studies describing student pharmacists and pharmacy technicians collecting medication lists have been conducted primarily within inpatient and institutional settings, involved face-to-face interactions with patients, have often lacked a comparator group^{1,9–16}, and are difficult to extrapolate to the community pharmacy setting.^{17–19} Therefore, a study in the community setting using student pharmacists or trained pharmacy technicians to collect medication lists prior to an MTM session is needed.

Assessing the quality and consistency of following a medication list collection protocol with accurate documentation has not been formally studied, nor has this process been evaluated in

the community pharmacy setting. Fidelity is the degree to which an individual follows a protocol as intended in implementation research.²⁰ It is measured through auditing of audio-tapes of intervention delivery or through direct observation.²⁰ Evaluating the fidelity of student pharmacists or other trained pharmacy staff's ability to follow a protocol for medication list collection could provide evidence to support the delegation of this task by pharmacists in the community pharmacy setting.

A small pilot study, conducted by one of the authors, demonstrated that trained student pharmacists can telephonically collect medication lists using a structured interview tool.¹⁰ The tool was expanded to include probes to facilitate the collection of comprehensive medication lists for a targeted MTM session. A telephonic (versus face-to-face) interview process was selected to minimize travel burden for the older adults and the barrier of an additional visit to the community pharmacy. The objective of this study was to determine the feasibility and fidelity of student pharmacists collecting patient medication list information using the structured interview tool and the accuracy of documenting the information.

Methods

This study was conducted as part of a larger randomized controlled trial (RCT) evaluating the feasibility and impact of a community pharmacist-provided targeted MTM session focused on medication use and falling among older adults.^{21,22} In the RCT, consented older adults were recruited from falls prevention workshops and were cluster randomized to an intervention group, which received a face-to-face targeted MTM session from a community pharmacist, or a control group, which received usual care (i.e. no study-based intervention).

The older adults were contacted to arrange a date and time to participate in a 60-minute pre-intervention telephone interview conducted by a trained student pharmacist. Male student pharmacists conducted the pre-intervention interview with male older adults based on feedback from the study's older adult advisory panel suggesting that male older adults would not be able to hear a female student pharmacist as easily on the telephone.^{21,22} The interview collected health status information, the medication list, and information about falls history. All pre-intervention interviews were audiotaped. The intervention group received the MTM session after the pre-intervention interview. All follow-up interviews for the RCT were conducted by the same student pharmacist who completed the initial pre-intervention interview with the older adult, allowing for consistency and rapport. The Institutional Review Board at the PI's institution approved this study.

Older Adult population—Enrollment criteria for the RCT study included adults age 65 years or older, the ability to speak English, having fallen in the past 12 months or having a fear of falling, completion of the falls prevention workshop, and capability to provide informed consent. A total of 80 community dwelling older adults were enrolled in the study. The average age of the subjects was 75.6 (s.d = 8.3) and 79% were female. A total of 33.6% self-reported "Very Good" or "Excellent" health.

Student Pharmacist Interviewers—Ten student pharmacists conducted the telephone interviews. Student pharmacists who had expressed interest in participating in a research

study were selected as the interviewers for this study. All of the student pharmacists were enrolled as full-time PharmD students in a four-year program. Three student pharmacists were first-year student pharmacists, three were second-year student pharmacists, and four were third-year student pharmacists at the time of their training.

Telephone Interview Protocol—To insure that a consistent data collection process was followed by the student pharmacists, a protocol was developed to collect and document information during the telephone interview. After scheduling the interview, the older adult received a mailed packet from the student pharmacist including a cover letter thanking them for participating with a reminder of their scheduled interview time, a copy of their informed consent document, a handout containing questions to be asked during the pre-intervention telephone interview, and a medication list worksheet to facilitate data collection of their medications. The medication list worksheet consisted of a grid, which the older adult could use to enter their medication list for use prior to the interview.

A structured interview tool developed for a previous study was expanded for use during the telephone interview for the purpose of collecting a complete medication list for each older adult (See Figure 1 for the structured interview tool).^{10,22} The tool included questions designed to collect information about demographic characteristics, the complete medication list (i.e. prescription, OTC and herbal), and other study specific items. For each medication identified, the tool contained questions designed to collect information related to medication strength, the number of tablets or amount taken with each dose, the number of times the medication is taken daily, the time of day the medication is typically taken, the indication, the duration of use, and any problems experienced by the older adult with the medication. The structured interview tool also contained a series of probing statements that were designed to gather additional medication-related information. In addition to medication allergies and adverse drug reactions, the probing statements assessed such things as medications used on an as needed basis, the use of various drug delivery systems, the use of OTC and herbal medications for self-care ailments (See Figure 1 for the full list of probes). For medications used on an “as needed” basis, the students were instructed to ask whether the medication had been used within the previous 30 days, and, if it had been used in the previous 30 days, how the patient used the medication (i.e. frequency of use).

All information collected during the telephone interview was documented on the structured interview tool. Following completion of the interview, the protocol included directions to document the written information in a web-based electronic medical record (EMR) developed by the investigators (BM, DM) for each older adult. The EMR was set up to reflect the structured interview tool to facilitate accuracy of entering information into the EMR. For medications taken on an “as needed” basis, student pharmacists were required to only document “prn”, not to document the frequency of use, and other information. Per protocol, information was to be entered into the EMR no more than two days after the telephone interview.

Student Pharmacist Training—Student pharmacist training consisted of a thorough review of the pre-intervention telephone structured interview tool. After a discussion with the student pharmacists about the role of interviewing in research, each question in the

interview tool was reviewed and a member of the study team (BM) provided each student pharmacist with a list of suggestions/reminders to use when asking or documenting information for certain questions. The student pharmacists were advised to alert the principal investigator (DM) if any concerns arose during the telephone interviews, such as serious medical issues or communication challenges. Next, the student pharmacists listened to an example of someone conducting the telephone interview. After the student pharmacists listened to the example and had time to review the structured interview tool, they participated in telephonic simulated practice interviews, in which their practice interview was recorded. Following the simulation, the students received immediate and personalized feedback related to interview skills and reflective listening. Procedures for the appropriate documentation of the information collected in the EMR, including the medication list, also were reviewed with student pharmacists.²² With the exception of the simulated practice interview, all training was conducted by investigators (AM, BM, and DM) with the students in a group setting. Overall, students received three hours of scheduled training.

Student pharmacists received feedback on their first 1–3 telephone interviews from a member of the study team (AM). Audio-recordings of the telephone interviews and the medication lists documented in the EMR were reviewed within one week of the actual interview. Feedback was given to the student pharmacist regarding missed probes or documentation errors to improve the next pre-intervention interview and to fix any documentation errors in the EMR. Missed probes or documentation errors were not reported to the community pharmacist.

Dependent Variables

Feasibility—The feasibility of having the trained student pharmacists conduct the telephone interviews was assessed in three ways. First, the proportion of older adults that completed the pre-intervention interview was determined. Second, the time, in minutes, it took for student pharmacists to collect the medication list during the telephone interview was measured. This was measured in two ways. The interview tool contained spaces where student pharmacists noted the time that they started and stopped the collection of the medication list. From the documented times, the elapsed time to collect the medication list was determined (n=71 interviews, 88.8%). If documented times were incomplete, a study team member (AM) determined the length of time from the audiotaped telephone interview (n=9 interviews, 11.2%).

The third measure of feasibility was based on end-user (i.e. pharmacist) feedback about the completeness and usefulness of the information collected by the trained student pharmacists and whether it facilitated the MTM session. The community pharmacist's feedback was obtained via telephone interview.

Fidelity—Fidelity for this study related to how well the student pharmacists adhered to the structured interview tool. A study team member (AM) conducted an audit by listening to the audio recording of each interview and noted whether a probe was asked by the student pharmacist. Fidelity was measured as the proportion of scripted probes that were asked by the trained student pharmacists.

Accuracy—Accuracy related to how accurately student pharmacists documented medication list information collected during the telephone interview in the EMR. During the audit the study team member listened to the audio recording of each interview and noted the medication list information that was provided by the older adult. Next, the study team member compared the medication list information noted from the audio recording to the medication list information documented in the EMR to determine the accuracy score for each interview. The score was determined as the information correctly documented by the student pharmacist relative to the information provided by the older adult.

Data Analysis—Descriptive statistics for the feasibility variables were determined. A qualitative approach to analyzing comments from the pharmacist interview was used and identified specific comments explaining the completeness and usefulness of the medication information collected by the student pharmacists.

Descriptive statistics for the fidelity and accuracy scores were calculated for each interview and for each scripted probe (fidelity) and documented medication list information (accuracy). A conservative approach to calculating the accuracy score was used; when a medication was omitted from the medication list it was also marked as incorrect for all aspects of the documentation (i.e. dose, frequency, etc.). In cases where students received feedback to correct documentation errors in the EMR, the initial incorrect documentation was used in the calculation of the accuracy score. Accuracy scores were determined separately for prescription medications, OTC medications, and herbal products or supplements.

To assess inter-rater reliability for fidelity and accuracy scores, 10% of the recorded interviews were reviewed by a student study team member and agreement between scores was compared. The interviews for inter-rater reliability agreement were chosen randomly, however the interviews the student study team member had conducted were purposefully skipped. Cohen's kappa was calculated to assess the agreement of the two fidelity and accuracy scores. The Cohen's kappa and 95% confidence intervals were calculated using R version 2.15.1.

Results

Feasibility

Of the 81 older adults who initially consented to participate in the study, the student pharmacists were able to contact and complete the pre-intervention telephone interview with 80 older adults. Student pharmacists took an average of 26.7 minutes (95% CI: 24.3–29.1 minutes, median 25.5 minutes, range: 10–64 minutes) to collect medication lists during the telephone interview.

The MTM pharmacist reported that having the medication list prior to the targeted MTM session allowed him to spend more time on assessment, recommendations, and education during the session. He felt the medication profiles documented in the EMR were largely complete and accurate. The MTM pharmacist noted that there were a few spelling and/or dosage errors for medications in the EMR, but he reported he was able to verify or correct

the simple errors using his pharmacist judgment. He noted, “Documentation provided by pharmacy students was the key to having a successful MTM session.”

Fidelity

All 80 telephone interviews were used in the analysis of fidelity (Table 1). The overall mean proportion of scripted probes that were asked by the student pharmacists during the telephone interviews was 83.75% (95%CI: 80.62–86.88%, range: 38.1–100%). Across all interviews, on average 3.3 probes (± 2.9 probes) were missed per interview. There were 12 interviews (15%) where all scripted probes were asked, 12 interviews (15%) where one scripted probe was missed, and 17 interviews (21.3%) where two scripted probes were missed (21.3%). Of the 68 interviews with missed probes, the most commonly missed probes related to medications that were used on an as needed basis (missed in 66.2% of interviews) and vitamins (missed in 38.7% of interviews).

Accuracy

Technical difficulties with the audio recordings occurred for four of the telephone interviews resulting in the audio of the older adult not being captured (student pharmacist audio only). Thus, 76 telephone interviews were used to calculate accuracy scores. A total of 99.4% of all prescription medications reported by the older adult during the telephone interviews were documented in the EMR. For three older adults, there was a single prescription medication missing from the EMR. A total of 99.1% of non-prescription medications were documented in the EMR. For five older adults, a single over-the-counter medication was not documented in the EMR. A total of 100% of all herbal medications provided by older adults during the telephone interview were documented in the EMR. Overall, seven older adults had a missing prescription, OTC, or herbal medication.

The overall accuracy score for prescription medication list items (e.g. the strength, number of tablets taken, times of day taken, etc. across all interviews) was 95.1% (95%CI: 94.3–95.8%). Table 2 summarizes the results for prescription, OTC and herbal medications. On average, there were 2.04 prescription medication documentation errors per medication list (± 2.84 errors). There were 31 interviews (40.8%) with 100% correctly documented prescription medication lists and 14 interviews (18.4%) with a single error in medication lists.

The overall accuracy score for OTC medications was 87.7% (95%CI: 85.9–89.3%). On average, there were 2.53 OTC medication documentation errors per medication list (± 2.75 errors). There were 20 interviews (26.3%) with 100% correctly documented OTC medications lists, 14 interviews (18.4%) with a single medications list error, and 15 (19.7%) interviews with two medication list errors.

The overall accuracy score for herbal medications was 92.7% (95%CI: 91.4–93.8%). On average, there were 1.86 herbal medication documentation errors per medication list (± 2.53 errors). There were 28 interviews (36.8%) with 100% correctly documented herbal medications lists, 7 interviews (9.2%) with a single medication list error (9.2%), and 9 interviews (11.8%) with two medication list errors.

Inter-rater Reliability

The inter-rater reliability between the two study staff members on the fidelity and the accuracy scores was high. The Cohen's kappa for the fidelity of probes, accuracy of prescription medications, OTC medications, and herbals were 0.76, 0.32, 0.79, and 0.65 respectively. The Cohen's kappa for accuracy of the overall medication list was 0.7. All Cohen's kappas were considered substantial agreement except for accuracy of prescription medications, which is considered fair agreement. Despite only fair agreement for the accuracy of prescription medications, the raters still had an overall 97.4% agreement with consistent scoring on 296 of the 304 potential prescription medication points.

Discussion

We developed a structured interview tool and documentation process for student pharmacists to collect medication lists from older adults. The tool and process were usable for the student pharmacists collecting information. The medication lists collected using the interview tool and documented in the EMR were useful for the pharmacist and facilitated the targeted MTM intervention. The structured interview tool and documentation process have the potential to increase MTM service provision in the community pharmacy setting by freeing up pharmacist time. Community pharmacies could utilize technicians with additional training and monitoring to perform this role.

For pharmacists to trust medication lists they did not personally collect, they need an assurance of interview tool adherence (fidelity) and accuracy. This study demonstrated high rates of fidelity to the structured interview tool. This is consistent with previous studies in the institutional setting where completeness of medication list collection by technicians was verified by a pharmacist, either by observation or independent collection.¹⁷⁻¹⁹ Reported rates were 90% for completeness of asking all required probes and 98.8% accuracy when the technician medication list was compared to a pharmacist interviewing the same patient.^{17,19} High rates of fidelity with the interview tool in our study translated to complete medication lists for the study pharmacist.

The high fidelity scores to the interview tool and accurate documentation could be due, in part, to the design of the structured interview tool. Specifically, several probes were used to elicit patients' engagement in reporting medications, especially targeting as-needed and symptom-specific medications. Although there was a range in the rate of students asking the scripted probes, we believe the variation in rates of probes being asked was based on the layout and usability of the interview tool. As our analysis assessed fidelity at the level of each probe, it allowed us to identify where errors were made and determine suggestions for improvements to the structured interview tool. Probes with poor fidelity often were buried among other text in the tool whereas probes with high fidelity were formatted as single-lines and required students to verify, using a check mark, each probe as it was completed. The ability to evaluate format characteristics of the interview tool will make it more effective. Subsequently, check boxes have been added throughout the interview tool for verification purposes.

Training also was important to the high rates of fidelity and accuracy, especially the simulated telephone practice with a single investigatory (BM) to ensure the student pharmacists were competent prior to allowing them to interact with the older adults. There is educational evidence to support using simulated practice to enhance skills. One of the authors has experience in designing educational programs that positively impact learners' skills and confidence to translate their skills into practice.^{10,23,24} Live or simulated practice has been used in previous studies involving student pharmacists and pharmacy technicians collecting medication lists.^{1,15–19} Training and simulation likely will be important for community pharmacy personnel if they will be tasked with collecting medication lists from patients.

Each older adult's complete and accurate medication list was not available to the researchers. Our hypothesis was that if the students asked the complete list of probes on the interview tool, a complete medication list would result from the interview. There may have been cases where the older adults forgot or chose not to report a medication, despite the probes, which would have created an incomplete medication list. In this study, the community pharmacist reported minimal gaps in medication lists supporting our hypothesis that high fidelity would result in complete medication lists. Although gaps in a medication list could have implications for the pharmacist preparing for the MTM session, pharmacists should attempt to clarify medication lists during an MTM session. Further, if gaps in the medication lists are detected, a QA/QI process could be used to assess why the information was missing and modify a tool to prevent the gap in the future.

For community pharmacists interested in implementing a process involving technicians conducting pre-MTM telephone interviews to collect medication lists, use of a structured interview tool and training is recommended. In contrast to our study, community pharmacies often have at least a partial medication list for each patient requesting or requiring a comprehensive medication review. In this case, the interview tool could be modified to elicit, verify, and/or update a current medication list for each patient, including OTC and herbal products. A medication list is dynamic, therefore periodic interviews and subsequent revisions may need to be made to insure the pharmacy has the most up-to-date and complete medication list.

Our results suggest that a structured interview tool and training resulted in high fidelity for collecting complete medication lists. The use of a tool to facilitate medication list collection is consistent with many other institutions utilizing support staff to conduct medication histories.^{1,13,14,18,19} The end-user or pharmacists should be involved in the tool development process to ensure that key information needed to conduct the MTM session is collected during the interview.¹⁹

Limitations

This study utilized a single telephone interview, conducted at baseline for the larger RCT, as the source of information for the medication list. Pharmacy services' best practices suggest utilizing multiple sources of information, including the local pharmacy record and patient and caregiver report to create the best possible medication history.³ Future studies may want

to confirm information collected with other sources, including prescribers and other pharmacy profiles, however this may be burdensome.

Student pharmacists received feedback on their interviewing techniques when they completed their initial interviews. This may have introduced a maturation bias into this study as students may have improved in their fidelity to the protocol. Our experience suggests that feedback immediately following implementation of the protocol can improve fidelity and accuracy. If there was a maturation bias, this would suggest that as students improve, so would completeness and accuracy. Highly motivated student pharmacists participated in this project and were aware their interviews were being audio recorded for quality assurance purposes. This level of motivation and accountability may not be generalizable to others conducting similar telephone interviews. We recommend identifying interviewers carefully, considering their vocal/intonation skills, ability to listen and clarify, and attention to detail.

Lastly, the older adults who participated in this study likely had higher health literacy than the general older adult population due to higher levels of completed education.²¹ Many of the older adults were able to state their drug names and some were able to complete a worksheet sent prior to the pre-intervention interview documenting their medication regimens. Patients with lower levels of health literacy may require additional methods be used for collecting medication list information.

Future Directions

There are several future directions related to medication list collection by non-pharmacists including evaluating the sustainability of utilizing student pharmacists to collect medication lists and evaluating use of other staff such as technicians or other non-clinical staff in using the interview tool. Additionally, the potential for direct cost savings and impact on pharmacists' time to provide additional patient directed services could be evaluated. Lastly, several changes to the interview tool to improve completeness fidelity, such as giving the commonly missed probes their own lines and check boxes is currently being pursued.

There are two possible models that could be utilized to make the use of the structured interview tool sustainable in the community pharmacy setting. The first model is the use of a trained and certified MTM technician in the community pharmacy. The technician could be trained at a School of Pharmacy or through a State Pharmacist Association. Although there may be a concern that using a technician in this manner would divert them from their regular workflow, the telephone interviews could be scheduled during slower times in the pharmacy.

A second model could involve a pharmacy contracting with a call center located, for example, at a School of Pharmacy using trained student pharmacists to collect the medication lists. The University of Florida College of Pharmacy has successfully implemented an MTM call center utilizing fourth year student pharmacists.²⁵

Conclusion

Trained student pharmacists were able to follow a structured interview tool to collect and document medication lists with a high degree of fidelity and accuracy. It is important to

evaluate the feasibility, fidelity, and accuracy of methods to collect and document medication lists by non-pharmacist personnel. This study provides successful strategies community pharmacists can use to employ non-pharmacist personnel in collecting medication lists to facilitate MTM service provision.

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Key Points**Background**

- Collecting medication list information can be a time-related barrier for pharmacists conducting MTM sessions.
- Literature supports pharmacy technician collection of medication list information in an institutional setting.

Findings

- Through training and using a scripted interview tool and documentation process, student pharmacists were able to collect medication lists from older adult patients.
- Medication list documentation by the student pharmacists was feasible with a high degree of fidelity to the structured interview tool and accuracy of documenting the collected information.
- Use of non-pharmacist personnel to collect medication lists may have the potential to increase MTM service provision in the community pharmacy setting by freeing up pharmacist time.

Begin Call and Introduce Self

Hello, PATIENT NAME, I am FIRST NAME, LAST NAME, a (describe role – student pharmacist, technician) at the (name of pharmacy). Thank you for scheduling your medication review with our pharmacist.

Before we get started, can you hear me OK?

Purpose of Phone Call:

The purpose of this phone call is to collect your medication information that the pharmacist will use during your appointment. This phone call will take about 20-30 minutes to gather information from you. Is this still a convenient time for you? Please let me know if at any time you would like to schedule another phone call to complete the interview. This conversation will be recorded for quality assurance purposes. Anything you tell me will remain confidential. Also, if you would like to opt out of answering a specific question, feel free to do so.

What questions or concerns do you have about this process?

Medication Information Gathering

This call is to gather all of your medication information. I will need information about all the medicines you used in the last 30 days. You may find it helpful to have all of your medicine bottles accessible during this part of our interview and any medication lists you keep. This includes any over-the-counter medicines, dietary supplements, or herbal remedies. Do you have your medicines in front of you? Are you ready to get started?

[If participant asks a medication-related question, respond: that is a good question. I will note your interest in that issue/side effect/medicine. As the interviewer, I recommend to all our patients to discuss your question with your pharmacist and/or doctor.]

(Record on the **Drug Therapy List**)

What medication allergies do you have?

- ☐ No known drug allergies
- ☐ List name(s) and reaction:

Have you ever had to stop taking a medication because you experienced a bad reaction?
Yes (list name(s) and reaction) / No

Let's start with prescription medicines - those medicines that a doctor or other medical provider has prescribed for you. Do you have your medicine bottles and medicine list nearby?

(Record on the **Drug Therapy List**)

What prescription medicines do you take on a scheduled basis?

Name / strength / dose / frequency / indication / duration of use /any problems

What other prescription medicines do you take on an as needed basis?

PROBES: Do you use any eye drops, patches, creams, inhalers, injectables?

What over-the-counter (OTC) products do you use? (Those medicines you can buy without a prescription)

Name / strength /dose / frequency / indication / duration of use / any problems

What vitamins do you take?

Name / strength /dose / frequency / indication / duration of use / any problems

What herbal supplements do you take?

Name / strength /dose / frequency indication / duration of use / any problems

PROBES:

What do you use to help you sleep?

... for pain?

... for allergy symptoms?

... for cold/cough symptoms?

... for stomach upset or heartburn?

... for constipation or diarrhea?

Imagine looking inside your medicine cabinet or drawer. What other medicines may be in there that we haven't listed yet?

General Adherence Assessment:

What problems have you experienced with your medications? Do you ever have -

___ trouble remembering to take them?

___ side effects?

___ trouble paying for them?

___ difficulty opening or administering the medicine?

Figure 1.

Structured interview tool for gathering medication list information

Table 1

Fidelity with Scripted Interview Probes

Probe	No. Completed (%)	95% CI
Difficulty paying for medications	80 (100)	95.5, 100
Adverse effects	78 (97.5)	91.3, 99.7
Difficulty remembering	78 (97.5)	91.3, 99.7
Problems administering medications	78 (97.5)	91.3, 99.7
Allergies to medications	75 (93.8)	86, 97.9
Nausea or heartburn medication	75 (93.8)	86, 97.9
Cough medication	74 (92.5)	84.4, 97.2
Constipation or diarrhea medication	73 (91.3)	82.8, 96.4
Creams	71 (88.8)	79.7, 94.7
Medication for allergy symptoms	68 (85)	75.3, 92
Patches	68 (85)	75.3, 92
Pain medication	67 (83.8)	73.8, 91.1
Anything else in the medicine cabinet	65 (81.3)	70.9, 89.1
Inhalers	64 (80)	69.6, 88.1
Eye drops	63 (78.8)	68.2, 87.1
Herbal products	58 (72.5)	61.4, 81.9
Over-the-counter products	58 (72.5)	61.4, 81.9
Vitamins	49 (61.3)	49.7, 71.9
As needed prescriptions	27 (33.8)	23.6, 45.2

n = 80

Table 2

Documentation Accuracy Scores for Medication List Information

Medication List Item	No. Applicable	No. Documented Correctly (%)	95% CI
Prescription Medications			
Strength	458	449 (98)	96.3, 99.1
Number of tablets to take	454	434 (95.6)	93.3, 97.3
Times taken daily	424	413 (97.4)	95.4, 98.7
Time of day taken	407	366 (89.9)	86.6, 92.7
Indication	474	460 (97)	95.1, 98.4
Duration used	469	460 (98.1)	96.4, 99.1
Problems with medication	462	411 (88.9)	85.7, 91.7
Over-the-counter Medications			
Strength	200	168 (84)	78.2, 88.8
Number of tablets to take	238	209 (87.8)	82.9, 91.7
Times taken daily	168	160 (95.2)	90.8, 97.9
Time of day taken	149	128 (85.9)	79.3, 91.1
Indication	274	260 (94.9)	91.6, 97.2
Duration used	272	248 (91.2)	87.2, 94.3
Problems with medication	260	196 (75.4)	69.7, 80.5
Herbal Medications			
Strength	199	188 (94.5)	90.3, 97.2
Number of tablets to take	287	271 (94.4)	91.1, 96.8
Times taken daily	285	277 (97.2)	94.5, 98.8
Time of day taken	283	245 (86.6)	82, 90.3
Indication	297	279 (93.9)	90.6, 96.4
Duration used	299	294 (98.3)	96.1, 99.5
Problems with medication	280	235 (83.9)	79.1, 88

Note: A total of 76 pre-intervention interviews were used for the analysis of documentation accuracy. The column labeled "No. Applicable" refers to the total number of instances of each medication list item that could be evaluated. This number represents the denominator for the analysis of accuracy of each item.