Title: Older patient and family discharge medication communication: A mixed-methods study

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ABSTRACT

Rationale, aims and objectives: Medication discrepancies place patients discharged from hospital at risk of adverse medication events. Patient and family participation in medication communication may improve medication safety. This study aimed to examine older medical patient and family participation in discharge medication communication.

Method: Two-phased mixed-methods study. Data were collected from July 2018 to May 2019. Phase 1 comprised observations and a questionnaire of 30 patients’ pre-hospital discharge. Phase 2 involved telephone interviews with 11 patients and family members post-hospital discharge. Phase 1 analysis included descriptive statistics and deductive content analysis. Inductive content analysis was used in Phase 2. Phase 1 and 2 findings were integrated.

Results: For Phase 1, observational data were deductively coded against the “continuum of patient participation”; information-giving was the most frequent level of participation observed on the continuum, followed by information-seeking, shared decision-making, non-involved, and finally autonomous decision-making. For descriptive statistics, written communication tools, noise and interruptions were frequently observed during medication communication. In Phase 2, three categories were found about how patients and families participate, and the factors influencing their participation: 1) obtaining comprehensive medication information; 2) preferred approaches for receiving information; and 3) speaking about medications in hospital. Integrated findings showed that written communication tools and routine hospital tasks may promote, while lack of family presence and environmental factors may hinder medication communication. Patients’ and families’ role in medication communication ranged from asking questions to influencing decisions, and was enhanced by healthcare professionals’ patient-centred communication.

Conclusions: More active patient and family participation could be achieved by encouraging them to identify medication-related problems. To create a climate for patient and family
participation, healthcare professionals should use written communication tools, capitalise on participation opportunities during routine hospital tasks, and use patient-centred communication.

**Keywords:** Medication, communication, discharge education, patient participation, family, patient discharge.
Introduction

Medication discrepancies are a global problem that make hospital discharge risky\textsuperscript{1}. In fact, 25-80\% of patients have at least one medication discrepancy at hospital discharge, much higher proportions than discrepancies at hospital admission\textsuperscript{2}. Up to 59\% of medication discrepancies have the potential to harm patients after hospital discharge\textsuperscript{3}. Common medication discrepancies include mismatched (i.e. medication omissions) or partially mismatched medications (i.e. discrepancy in strength of medication)\textsuperscript{4}. Ensuring medication safety and preventable harm is a major challenge for hospitalised patients\textsuperscript{5}.

Patient and family participation is advocated internationally as a strategy to enhance medication safety at transitions in care\textsuperscript{1}. Transitions in care are the transfer of the responsibility of patients' healthcare, which can occur between a variety of settings and people, such as transfer to the patient's home (i.e. discharge), or to other healthcare professionals\textsuperscript{4}. When patients and families participate in care, they can identify medication discrepancies and influence medication safety\textsuperscript{6}. For example, patients and families can undertake two-way medication communication with healthcare professionals, to ensure accuracy of medications charted\textsuperscript{7, 8}. Further, patients and families generally desire an active role and want to contribute to medication shared decision-making\textsuperscript{7, 8}.

Yet, the process of involving patients and families in discharge medication communication is disjointed\textsuperscript{9}. Healthcare professionals share parts of discharge information in between care activities, throughout hospitalisation, consequently, patients may not realise the importance of information imparted\textsuperscript{9, 10}. In two recent qualitative systematic reviews, literature about patient and family participation in managing medications at transitions of care was synthesised and appraised. Researchers found that patients lacked role clarity\textsuperscript{8}, and families missed opportunities to participate\textsuperscript{7}. Additionally, barriers to patient and family participation in medication communication included the pressure to discharge patients
quickly, the use of e-prescribing and healthcare professionals’ communication skills\textsuperscript{7,8}. These findings indicate that hospitals are socio-technical systems where people, tasks, tools and technologies, organisational and environmental factors can influence processes like the success of patient and family participation\textsuperscript{11}.

Both qualitative systematic reviews identified the need to investigate older patients’ medication communication, using observational methods\textsuperscript{7,8}. Collecting observational and interview data allows both peoples’ behaviours and perspectives to be understood within the socio-technical context where they occur, providing a holistic understanding\textsuperscript{12}. There is a real need to find solutions to improve older patients’ medication safety, as they are at high risk of medication discrepancies at discharge due to multiple co-morbidities and polypharmacy. The aim of this study was to examine older medical patients’ and their families’ participation in discharge medication communication. Specific research questions include: 1) How do patients and families participate in discharge medication communication?; and 2) What factors facilitate or hinder patients’ and families’ participation in discharge medication communication?

**Methods**

**Design**

An explanatory two-phased mixed-methods quant → QUAL study was conducted\textsuperscript{13}. The qualitative findings helped explain and understand quantitative results. In Phase 1, patients completed a questionnaire and were observed prior to hospital discharge, to examine how patients participate in discharge medication communication and the barriers and facilitators to their participation. In Phase 2, patients and their family completed telephone interviews after hospital discharge, to examine how patients and families participate in discharge medication communication and the barriers and facilitators to their participation. Phases were integrated using a results matrix. Data were collected from July 2018 to May 2019. Ethics approval was gained from the participating hospital and university.
Setting and sample

This study took place in two medical wards (respiratory and specialised medicine) in one Australian metropolitan tertiary hospital. The wards were purposefully chosen for pragmatic reasons; they regularly admitted older patients with chronic conditions.

Inclusion criteria were patients: 1) $\geq 65$ years; 2) $\geq$ one chronic illness; 3) $\geq$ six medications prescribed per day that they or their family managed at home; 4) with confirmed hospital discharge to home on the day of observation (Phase 1 only). Exclusion criteria were patients who were: 1) physiologically unstable; 2) mentally not capable of participation; 3) unable to communicate in English.

After initial analysis of Phase 1 findings, it became evident that families contributed to discharge medication communication. In Phase 2, some eligible patients stated that their family usually managed their medications at home and nominated their family to participate on their behalf. Conceptually, family are viewed as an extension of the patient, who cannot be disconnected from the patient\textsuperscript{14}, thus both patients and families to comprise the Phase 2 sample. Family participants were: 1) $\geq 18$ years; 2) capable of providing informed consent; 3) able to communicate in English; and 4) responsible for managing patient’s medications.

Phase 1 and 2 recruitment

On data collection days, all patients on participating wards were screened for eligibility. If eligible, they were engaged in the informed consent process. If patients requested family members to participate in Phase 2 interviews, the family member was consented. Phase 1 and 2 participants differed. In Phase 1, healthcare professional written consent was not required as the human research ethics committees determined that the focus was patient participation. However, all healthcare professionals were informed of the study and had the option to verbally refuse observations while the researcher was present. No healthcare professionals refused.
**Phase 1 data collection**

A structured observation tool was developed based on prior research and the Systems Engineering Initiative for Patient Safety 2.0 Model (SEIPS 2.0)\(^1\)\(^1\), which comprises “work systems” factors including “task”, “tools and technologies”, “organisation”, and “environment”. Content validity for the observational tool was established by four pharmacists, three nurses and the hospital consumer advisor group. Two trained researchers (blinded) were both present for the first eight recruited patients and completed observation tools independently. The percentage of agreement of observational data between observers was 98.7%.

Observations occurred Monday to Friday, during business hours. The researchers stood near the patient when a communication encounter occurred, which was defined as the verbal interaction between a patient and healthcare professional, while in proximity of each other. Communication encounters were audio-recorded using a lapel microphone connected to an audio-recorder. Observations ceased once the patient vacated the ward or after two hours of observation, whichever came first.

Patients completed a short questionnaire about their age, gender, number of hospitalisations last year, education, employment, medication practices, and preferences for participation in medication communication. Additionally, eight items about medication-related problems following hospital discharge were used from the “Medication Use Survey”\(^1\)\(^5\). Participants could respond as “not concerned”, “moderately concerned”, and “very concerned” for each medication-related problem.

**Phase 1 data analysis**

Questionnaire and observation tool data were entered into IBM SPSS statistics (version 24) software and were check for accuracy and distribution. Data were described using descriptive statistics including frequencies, percentages, median and interquartile range, and mean and standard deviation.
Audio-recordings were analysed using deductive content analysis. A categorisation matrix was designed, using Thompson’s “continuum of patient participation”. At the most passive level of the continuum patients are “non-involved”, meaning they are silent. In the middle of the continuum there is “information-seeking” and “information giving” by patients. At the highest-level patients undertake decision-making that is shared or autonomous. Each dimension of the matrix was a level of the continuum; the presence of a dimension was achieved if the patient exhibited the dimension at least once during the encounter. Recorded communication encounters were coded independently by two researchers (blinded). The agreement between raters was 82.3%, with inconsistency on the dimension “shared-decision making”, but after discussion the researchers resolved discrepancies. A quasi-quantitative approach was used to count the frequency of data in the matrix. Communication encounters that did not involve medication communication were not analysed.

**Phase 2 data collection**

Patients and family were contacted two days after discharge to arrange a time to conduct telephone interviews with a researcher (blinded). Interviews were semi-structured (see supporting information for interview guide). After each interview the lead author (blinded) listened to the tapes and conducted initial analysis using contact summary forms. Data saturation was achieved across the total sample of 11 patients and families when the team determined that no new information was emerging, and Phase 1 findings could be sufficiently understood.

**Phase 2 data analysis**

Interviews were transcribed verbatim by a professional transcription service. The lead author (blinded) undertook inductive qualitative content analysis. First, transcripts were imported into NVivo and line-by-line coding was undertaken producing codes. Next, similar codes
were grouped together into sub-categories; flow diagrams were used to assist this step. Finally, sub-categories were explored to determine which belonged together, resulting in categories. The entire process was iterative, with the researcher constantly referring to raw data. The entire research team reviewed the emerging sub-categories and categories, to question and confirm the analysis process.

**Phase 1 and 2 integration**

Phase 1 and 2 findings were integrated into a results matrix, which is an integrative table that allows side-by-side comparisons and new insights\textsuperscript{20}. A table was created with columns labelled “Phase 1 observations” and “Phase 1 questionnaires”, and the rows were labelled as each category found in Phase 2. The researchers looked for Phase 1 data that matched the Phase 2 categories. These supporting data were entered into the table, and enabled researchers to look across rows and identify key integrated findings.

**Rigor**

To ensure rigor, many strategies were undertaken. First, data triangulation occurred, providing a credible construction of discharge medication communication\textsuperscript{13}. Second, Phase 1 data were collected and analysed by more than one researcher enhancing dependability. Third, the research team reviewed Phase 2 findings at each stage of analysis, increasing dependability\textsuperscript{21}.

**Results**

**Phase 1**

Of 42 eligible patients 30 consented. Of the other 12, six were not interested in participating, three were symptomatic, two were frustrated with the discharge process, and one was already participating in another research study. Thirty patients were observed, in 71 encounters that involved medication communication. Patient were observed in a median of two (IQR=2) medication-related encounters.
Questionnaire results. Patients’ mean age was 76.8 years (SD=7.2), and 16 (53.3%) were male (Table 1). Half (n=15, 50.0%) of the patients had a family/friend/carer who helped them to take medications at home. For items about medication-related problems\(^{15}\), the majority of patients were “not concerned”, with 26/30 or more choosing this option for seven out of eight items. Nine (30.0%) patients were “moderately concerned” about “unwanted effects from your medicines”.

Observation results. Data were collected and reported as per SEIPS 2.0 model “work systems” factors, including “tasks”, “tools and technologies”, “organisation”, and “environment”\(^{11}\). Across 71 medication-related encounters, medication communication occurred concurrently with “tasks”, including discharge planning conversations (n=37, 52.1%) of median duration one minute (IQR=0.04), medication counselling (n=31, 43.7%) of median duration seven minutes (IQR=0.2), specialist healthcare professional consultations (n=2, 2.8%) ranging from 11-16 minutes, and medication reconciliation (n=1, 1.4%), which took 17 minutes. Ninety-three percent (n=66) of these encounters occurred in the patient’s room which was private (n=54, 76.1%) or shared with another patient (n=12, 16.9%), the remaining encounters occurred in public spaces like corridors and nursing stations.

For “organisational” factors, the composition of people present during encounters were pharmacists (n=43, 60.6%), nurses (n=26, 36.6%) and doctors (n=2, 2.8%). Seven patients had family present across 12 encounters (17.0%), and of these encounters, families undertook medication communication in nine encounters. Other “organisational” factors were; patients communicated the need to be discharged by a set time (n=8 encounters, 11.3%); staff communicated the need to quickly transfer/discharge the patient (n=4 encounters, 5.6%); and patients multi-tasked, such as packing their belongings while
communicating (n=8 encounters, 11.3%), which may hinder patient communication. Twenty-five interruptions were witnessed; one encounter had three interruptions, five encounters had two interruptions, and the remaining 12 encounters had one interruption.

In 71 encounters, a total of 66 “tools and technologies” were used by patients (> one tool was used in some encounters). A printed list of discharge medicines used most frequently (n=29, 40.8%), which was always provided by pharmacists, which may facilitate communication. In 36/71 encounters, no tools were used. Communication with the patients was always face-to-face, four family members communicated via the phone. Finally, the most common “environmental” factor influencing communication was background noise, present in 35 (49.3%) encounters, which could be a barrier to patient participation.

Audio-recorded results. The presence of each level of the “continuum of patient participation” was measured across 71 encounters; each encounter could contain one or more levels of the continuum. In 21/71 encounters, patients were “non-involved”. In the remaining encounters, one or more levels of patient participation were evident within the same encounter; 34 encounters had evidence of “information-seeking”; 41 had evidence of “information-giving”; 24 had evidence of “shared decision-making”; and two had “autonomous decision-making” (Figure 1). For “information-giving” 19 instances (46.3%) had evidence of patients giving information about medication-related problems. In all, 16 (66.7%) “shared decision-making” instances were discussions around accessing medications in the community, such as patients’ preferred pharmacy.

Phase 2

Of 23 patients approached, 12 consented and eight were interviewed; seven refused participation due to lack of interest, three requested for their family to participate, and one was enrolled in another study. Four patients withdrew once phoned due to: illness (n=2), new poor prognosis (n=1), and no longer meeting inclusion criteria (n=1). Patients’ median age
was 71.5 years (IQR=11), half were male, most liked to have a shared role discussing medications with healthcare professionals (62.5%). Family member age ranged from 60-87 years old. Two were male spouses and one was a daughter. All family participants were carers for their loved ones, who had cognitive impairment, high physical care needs at home or were non-English speaking. Interviews were on average 18 minutes in duration. Three categories were found in the interview data (See Table 2).

Category 1. Participants explained getting the full picture about medications from different healthcare professionals, during ward rounds, discharge medication counselling or medication administration, which facilitated perceived medication knowledge and ability to manage medications. Most patients spoke of learning about medications at nurses’ medication administration rounds such as medication purpose, side-effects and self-management. Doctors provided credible information on changes made to medications and why. Finally, pharmacists provided a summary of all medicines to take in the community, and when to take them.

About half of the participants actively corroborated hospital information, or searched for further missing information, once back in the community. Participants trusted sources of information included their community pharmacist, their General Practitioner (GP) and the internet. Few participants sought GP advice, unless visiting them for other reasons. The remaining participants felt fully informed through one-way medication communication from hospital healthcare professionals. They believed healthcare professionals’ testimony was correct, trustworthy, and were agreeable with their instructions seeing no need to communicate with or question healthcare professionals.

Category 2. Participants wanted to connect with healthcare professionals during medication communication. For doctors, participants realised that medication
conversations may not be their priority, but desired more time talking with doctors using an in-depth, friendly and non-technical approach. Participants expressed their comfort talking with nurses about medications, who they developed rapport and comfort with over time. Lack of continuity of care, agency nurses, nurses’ busy schedules and nurses’ relational skills were perceived hinderances to nurse-patient connection. Patients were impressed with pharmacists’ communication style and time spent providing an individual consultation. Families found it difficult to predict and be present for doctors’ and pharmacists’ conversations.

Participants valued the printed list of discharge medications provided by the pharmacist, which was perceived as helpful, informative, suitably presented, and a professional hospital service. Most participants actively referred to this document in the community to check medication dosages, frequencies, and durations, and used it to facilitate medication conversations with community healthcare professionals. This was especially useful for families who missed medication conversations in hospital; one family noticed conflicting information on the document. The medication list was less useful for participants with dosage administration aids.

Category 3. Patients and families participated by seeking clarification and information. However, asking questions was challenging because patients desired invitations, were unsure if asking questions was acceptable, and forgot to ask questions when healthcare professionals were present. Participants were sometimes reluctant to share information, due to assumptions that patients’ medication history and medication list provided was well-known by healthcare professionals. Additionally, passivity was influenced by past experiences, when sharing information about usual routines had not changed doctors’ decisions about prescribing or nurses’ decisions about medication administration. Yet, some participants had unknowingly influenced healthcare professionals’ decision-
making by raising medication-related problems. For instance, participants shared concerns about side-effects, delivery methods or double-checked medications when administered, leading to clarifying conversations with healthcare professionals and/or changes to prescribed or administered medications.

Families acted as medication communicators on the patient’s behalf and checked patients understood the medication information received. One family member who preferred a more active approach to communication made sure the patient’s needs were met by having medications crushed and appropriate pain relief charted and administered. Two family members preferred a passive approach in hospital and described more actively advocating for the patients in the community.

**Integrated results**
Phase 1 and 2 findings were integrated (see supporting information), and then conceptualised according to the SEIPS 2.0 Model (See Figure 2). Thus, it emerged that work system factors like routine hospital interactions and written tools promoted medication communication, while environmental factors like noise and organisational factors including family presence hindered it. In terms of process, patient and family medication communication ranged from passive to active including behaviours like asking questions, information seeking and giving and influencing decisions. The medication communication process was underpinned by patient-centred care principles.

**Discussion**
For Phase 1, information-giving was the most frequent type of participation observed and content was associated with medication-related problems about half of the time. Family presence, communication tools, environmental factors and interruptions frequently influenced effective communication. In Phase 2, patients and families reported learning about medications in hospital and from other sources. They desired verbal patient-centred
communication, supported by written information, and participated by seeking and sharing information, and influencing decisions. Integrated results demonstrated that complex work-systems factors influenced the process of medication communication. The process of medication communication was underpinned by patient-centred communication, with active patients and families participating along a continuum from asking questions to influencing decisions.

Our study demonstrates that healthcare professionals need strong communication skills in demanding clinical environments. Pharmacists and nurses often deliver hurried and unilateral discharge information, with little encouragement for patient and family participation due to noise, interruptions\(^{22}\), and organisational pressures\(^{23}\). Despite these contextual pressures, healthcare professionals’ mannerisms underpin the success of patient participation in medication communication\(^8\), creating a challenge for healthcare professionals. When participating in decision-making conversations about initiating medication therapy, other researchers have shown that patients are more focused on the relational communication than doctors and pharmacists\(^{24}\). Educating clinicians on high-quality patient-centred communication may be effective in simulation-based training, as communication could be practiced with mock contextual pressures. Simulation-based training can improve patient and family perceptions of healthcare professionals’ communication\(^{25}\). Our study demonstrates the importance of integrating patient and family participation into everyday work processes. Like our study, other inpatients report gathering information from healthcare professionals throughout hospitalisation\(^{26}\). Health-seeking behaviours may be triggered by changes in individuals’ health conditions as hospitalisation can increase information-seeking behaviors\(^{27}\). In our study routine tasks like medication counselling and medication administration were identified as opportunities to engage patients. However, researchers have shown that healthcare professionals often do not intentionally involve
patients and families during these activities, and can become task-orientated, highlighting the need for a cultural shift from current practice\textsuperscript{28}.

The shared decision-making that frequently occurred during our observations tended to focus on filling prescriptions, yet participants stated they shared medication-related problems to influence decisions. Future research should identify ways to encourage patients to report medication-reported problems in hospital. Conversation guides and decision aids commonly focus on discussions about cancer screening and medication for diabetes\textsuperscript{29} and can improve communication about patients’ concerns and decision-making preferences\textsuperscript{30}. In the context of people with polypharmacy and multiple co-morbidities, conversation guides are acceptable for use by pharmacists and patients and aid structured participation by encouraging patients to voice medication concerns\textsuperscript{30}. However, conversation aids can be viewed as time-consuming\textsuperscript{30} raising questions about acceptability for the hospital environment.

Like this work, others have demonstrated that families struggle to be present for hospital medication communication, due to unpredictable timing\textsuperscript{7,22}. Families want doctors and pharmacists to inform them about medications and are frustrated when they do not\textsuperscript{7}. They desire phone calls to be informed\textsuperscript{7}; it was promising that in four encounters, telephone communication occurred to involve families.

\textbf{Limitations}

There are limitations in our research. First, few patient-doctor encounters were witnessed because observations commenced after doctors had confirmed discharge. Future researchers should investigate doctors’ role in discharge medication communication. Second, families’ level of participation was not explored in Phase 1; based on our findings this would be an important area for future research. Third, a new data collection tool was created. The content validity and inter-rater reliability testing strengthens confidence in this tool. Fourth, phone interviews occurred 2-4 days post-discharge, which could result in recall bias. However,
providing patients with one day at home to return to routine, and flexibility in timing of interviews enhanced participant compliance with interviews. Fifth, data were collected during normal business hours; future research could explore how patient participation differs after hours. Sixth, some participants refused participation in the study due to frustration with the discharge process, thus, our sample may reflect patients who are more satisfied with the discharge process. Finally, this study was conducted at one site, and findings may not be generalisable. Details about the setting and sample have been provided to allow readers to judge applicability of findings for their own setting.

Conclusions

Healthcare professionals are in a prime position to use everyday activities to promote patient and family learning and communication about medications. Having healthcare professionals with patient-centred skills is imperative; the short time spent discussing medication, coupled with “work system” disturbances puts medication communication at risk of becoming one-way. To make full use of patients and family members, there is a need to capitalise on the knowledge they hold. Patient and families perceive their role in communication as passive, yet, they unknowingly hold vital information about medication-related problems. Encouraging patients and families to share problems may be a strategy to harness patients’ and families’ potential to contribute to shared decision-making. Providing specific opportunities for patients and family to communicate deliberately, in this more active way, ultimately can contribute to medication safety.

References


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Conflict of interest
Authors have no conflicts of interest to declare.

Table 1 Participant characteristics

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Phase 1</th>
<th>Phase 2</th>
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<tbody>
<tr>
<td></td>
<td>30 patients</td>
<td>8 patients</td>
</tr>
<tr>
<td>Age (years)</td>
<td>Mean= 76.8 (SD= 7.2)</td>
<td>Median 71.5 (IQR 11)</td>
</tr>
<tr>
<td>Condition</td>
<td>Male n (%)</td>
<td>16 (53.3)</td>
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<tr>
<td></td>
<td>Condition that makes it hard to talk with healthcare professional n (%)</td>
<td>3 (10.0)</td>
</tr>
<tr>
<td></td>
<td>Median number of hospital admission in last 12 months (interquartile range) n (%)</td>
<td>2 (2.0)</td>
</tr>
<tr>
<td></td>
<td>Brought own/patient’s medications into hospital n (%)</td>
<td>22 (73.3)</td>
</tr>
<tr>
<td></td>
<td>Brought own/patient’s documents about medications (i.e. list of medications) into hospital n (%)</td>
<td>12 (40.0)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Highest level of education n (%)</th>
<th>25 (83.3)</th>
<th>6 (75.0)</th>
<th>2 (66.7)</th>
</tr>
</thead>
<tbody>
<tr>
<td>High school or below</td>
<td>4 (13.3)</td>
<td>2 (25.0)</td>
<td>0 (0.0)</td>
</tr>
<tr>
<td>Diploma/advanced diploma/certificate</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
<td>1 (33.3)</td>
</tr>
<tr>
<td>University</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
<td>1 (33.3)</td>
</tr>
</tbody>
</table>

| Family member/friend/carer helps participant take their medications at home n (%) | 15 (50.0) | 1 (12.5) | N/A |

<table>
<thead>
<tr>
<th>Preferred role in discussing medications with healthcare professionals n (%)</th>
<th>19 (63.3)</th>
<th>5 (62.5)</th>
<th>1 (33.3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I like the healthcare professional and I to have a shared role in discussions about my medications</td>
<td>7 (23.3)</td>
<td>2 (25.0)</td>
<td>2 (66.7)</td>
</tr>
<tr>
<td>I like the healthcare professionals to lead discussions about my medications</td>
<td>4 (13.3)</td>
<td>1 (12.5)</td>
<td>0 (0.0)</td>
</tr>
</tbody>
</table>

*Note. Medians/means were used based on data distribution.*
<table>
<thead>
<tr>
<th>Category</th>
<th>Sub-category</th>
<th>Exemplar quotes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Attaining comprehensive medication information</td>
<td>1. Getting the full picture about medicines from a range of hospital healthcare professionals</td>
<td>When I talk to them (nurses) and they're talking to me - they're giving me my medicine for the morning or the afternoon. They start talking to me while I'm taking, and I ask them again, what is this I'm taking and what it's for, …so I don't have any problems talking to them. (Patient 5)</td>
</tr>
<tr>
<td></td>
<td>2. Corroborating information received from hospital healthcare professionals to varying degrees</td>
<td>Well, I like to read, and I like to know what's in things. In fact, after that experience with the cardiologist, every time they gave me a new drug I would go and research it and take the stuff with me to the next visit. (Patient 4)</td>
</tr>
<tr>
<td>2. Preferred approaches for receiving information</td>
<td>1. Connecting with healthcare professionals enhances medication communication</td>
<td>She (pharmacist) came in for about - I thought she'd be about two minutes. She ended up sitting on the bed. [Laughs]. Because I was asking so many questions. She sat there for about 25 minutes. (Patient 2)</td>
</tr>
<tr>
<td></td>
<td>2. Valuing written medication information</td>
<td>The paperwork [discharge medicine list] from the pharmacist… what it's [medication] for and dosages and what not… I've looked at it a few times… it was very helpful that. Because you're trying to take too much in when in hospital …. you sort of don't remember half the things that crop up, not at my age anyway. (Patient 6).</td>
</tr>
<tr>
<td>3. Speaking about medications in hospital</td>
<td>1. Seeking information from hospital healthcare professionals, if needed</td>
<td>Because if I've got a question I will ask. (Patient 7).</td>
</tr>
<tr>
<td></td>
<td>2. Shaping healthcare professionals’ decisions by sharing concerns</td>
<td>They (doctors) were reluctant to give her a pill initially, they wanted to give her an injection which would have meant twice a day…but I can't do that I'm sorry, so they went away and rejigged it all and said that there's this new Apixaban out and it might be a good idea. (Family member 3)</td>
</tr>
<tr>
<td></td>
<td>3. Sharing information to advocate for the patient</td>
<td>(Patient name) is very old-time…it's yes sir, no sir, 3 bags full sir when she's talking to doctors and she's always very deferent…. whereas me, I'll say right-o chap … I like to know what's happening, but it's not always easy to get it. I will phone and say can I speak to (doctor’s name) treating doctor and they say oh we can't find him, he's off somewhere else… (Family member 2)</td>
</tr>
</tbody>
</table>
Figure 1. Frequency of patient participation across each encounter (n=71)

Figure 2. Integrated results