

## Original Research

# Hospital discharge: What are the problems, information needs and objectives of community pharmacists? A mixed method approach

Lea D. BRÜHWILER , Kurt E. HERZBERGER , Monika LUTTERS 

Received (first version): 9-Jul-2017

Accepted: 22-Aug-2017

Published online: 25-Aug-2017

### Abstract

**Background:** After hospital discharge, community pharmacists are often the first health care professionals the discharged patient encounters. They reconcile and dispense prescribed medicines and provide pharmaceutical care. Compared to the roles of general practitioners, the pharmacists' needs to perform these tasks are not well known.

**Objective:** This study aims to a) Identify community pharmacists' current problems and roles at hospital discharge, b) Assess their information needs, specifically the availability and usefulness of information, and c) Gain insight into pharmacists' objectives and ideas for discharge optimisation.

**Methods:** A focus group was conducted with a sample of six community pharmacists from different Swiss regions. Based on these qualitative results, a nationwide online-questionnaire was sent to 1348 Swiss pharmacies.

**Results:** The focus group participants were concerned about their extensive workload with discharge prescriptions and about gaps in therapy. They emphasised the importance of more extensive information transfer. This applied especially to medication changes, unclear prescriptions, and information about a patient's care. Participants identified treatment continuity as a main objective when it comes to discharge optimisation.

There were 194 questionnaires returned (response rate 14.4%). The majority of respondents reported to fulfil their role as defined by the Joint-FIP/WHO Guideline on Good Pharmacy Practice (rather) badly. They reported many unavailable but useful information items, like therapy changes, allergies, specifications for "off-label" medication use or contact information. Information should be delivered in a structured way, but no clear preference for one particular transfer method was found. Pharmacists requested this information in order to improve treatment continuity and patient safety, and to be able to provide better pharmaceutical care services.

**Conclusion:** Surveyed Swiss community pharmacists rarely receive sufficient information along with discharge prescriptions, although it would be needed for medication reconciliation. According to the pharmacist's opinions, appropriate pharmaceutical care is therefore impeded.

### Keywords

Patient Discharge; Continuity of Patient Care; Community Pharmacy Services; Interprofessional Relations; Needs Assessment; Patient Safety; Pharmacists; Switzerland

### INTRODUCTION

Hospital discharge is a critical step in patient care. A patient experiences a mean of four medication changes and may suffer from adverse drug events during their stay.<sup>1-3</sup> The therapy at discharge has to be continued as prescribed by the clinicians until the next consultation with a general practitioner (GP). However studies from Australia and Switzerland show that GP appointments are often delayed.<sup>4,5</sup> In some countries, community pharmacists are therefore the first health care professionals encountered by the recently discharged patient, providing medication supply and pharmaceutical care.<sup>2</sup>

Insufficient communication between hospitals and community pharmacists was identified as a main barrier to appropriate medication reconciliation.<sup>6</sup> It can lead to

discrepancies between different documentation<sup>7,8</sup>, medication supply gaps<sup>9</sup>, and subsequent hospital readmissions.<sup>10</sup> The readmission rate may be reduced by a community pharmacy-based intervention.<sup>11</sup> Drug related problems were detected in 25% of hospital discharge prescriptions.<sup>12</sup> In these cases, pharmacies had to handle prescriptions without quantities or with unusual doses. A recent intervention study in a Swiss region, aiming at optimising communication found a reduction of interventions by the community pharmacies after an in-hospital intervention.<sup>4</sup> But it is unknown if the performed optimisations met the pharmacists' needs and objectives. To our knowledge, no study so far has compared the currently available information with the desired information in a mixed method study.

The needs and wishes of subsequent health professionals when dealing with discharged patients have been studied for GPs, pointing out the insufficient quality and quantity of information transfer.<sup>13-17</sup> One study in GPs compared the available and desired information after discharge and found significant discrepancies.<sup>18</sup> Information about drug discontinuation was available for 14% of GPs, while 89% desired to receive it. The authors also compared information desire between GPs and community pharmacists and found very similar needs. Even though

**Lea Domenica BRÜHWILER.** MSc. Clinical pharmacist. Clinical Pharmacy, Cantonal Hospital of Baden. Baden (Switzerland). lea.bruehwiler@ksb.ch

**Kurt Eduard HERZBERGER.** PhD. Professor. Head of Pharmaceutical Care Research Group, University of Basel. Basel (Switzerland). kurt.hersberger@unibas.ch

**Monika LUTTERS.** PhD. Chief of Clinical pharmacy, Cantonal Hospital of Baden. Baden (Switzerland). monika.lutters@ksb.ch



pharmacists are often encountered earlier as many patients visit them before the GP, there are only a few studies focusing on them.<sup>18-23</sup> These studies assessed the information transfer from hospitals, the community pharmacists' challenges and needs in France, United Kingdom and Belgium. The survey with Belgian community pharmacists conducted after a prospective study found that they are highly interested in obtaining more information at discharge.<sup>19</sup>

In Switzerland, GPs are automatically provided with the discharge summary, but its content depends on the hospital software and the prescriber.<sup>12,16</sup> Patients usually receive summaries along with their discharge prescription, but it remains unclear how many of them hand it to their pharmacist. A specialty of the Swiss health care system is, that in some regions prescribed medicines may be dispensed directly by physicians, their medical team or hospitals (so called "self-dispensing").<sup>24</sup> Some hospitals provide bridging supplies to their discharged patients, whilst others have public pharmacies. Therefore, community pharmacies in Switzerland may play different roles depending on regions.

According to the Joint-FIP/WHO Guidelines on Good Pharmacy Practice, pharmacists should fulfil certain roles, such as "provide effective medication therapy management" (Role 2).<sup>25</sup> Specifically, Function B ("manage patient medication therapy") outlines that pharmacists play an essential role in evidence based treatment. They take the responsibility for coordinating the interdisciplinary team's work, and transfer their knowledge to other health care professionals in order to ensure appropriate medication use. Function C encourages community pharmacists to "monitor patient progress and outcomes". By assessing, interpreting and documenting clinical data and test results, pharmacists may monitor and influence health outcomes of their patients. But, in order to fulfil these roles, access to therapy-related, health-related and care-related data and collaboration on an organisation-related level are essential. To our knowledge, there is no study evaluating if pharmacists fulfil these roles.

This study aims to a) Identify community pharmacists' current problems at hospital discharge, their self-defined roles and the fulfilment of internationally defined roles, b) Assess the information needs by evaluating current availability and usefulness of information in community pharmacies, specifically therapy-, health-, care- and organisation-related information, and c) Gain insight into community pharmacists' objectives and strategies for discharge optimisation.

## METHODS

The mixed method approach comprised both qualitative and quantitative measures. The qualitative focus group discussion helped to gain a deeper insight in the subject in order to design the subsequent quantitative questionnaire.<sup>26</sup>

This study did not involve health related patient information, nor health or illnesses were studied. Therefore, according to Swiss law on human research, no ethical approval was needed.<sup>27</sup>

## Focus group

The focus group was conducted with a convenience sample of six community pharmacists. They were pragmatically chosen from the authors' professional contacts to represent different subgroups in age, sex, regional health care system (e.g. self-dispensing model), experience and position within the pharmacy. The inclusion criterion was current employment in a Swiss community pharmacy. Pharmacists were initially contacted by phone.

The focus group session, led by two investigators, followed a script with seven open-ended questions:

1. "Please state the role of your pharmacy when your client is discharged from hospital."
2. "In your experience, what are the most frequent problems that you encounter at hospital discharge?"
3. "Assume that the hospital staff (e.g. physician, pharmacist, nurse) provides information about the discharged patient, in addition to the standard prescription. Please state all information that would be useful or interesting for your daily work."
4. "We collected useful and interesting information items and the study team added some ideas. Please vote with green and orange cards for useful and unuseful items, and vote with the yellow card for a neutral opinion."
5. "So far we collected information items that could be transferred to community pharmacies in future. Pharmacists need competencies to deal with such information. Which competencies do pharmacists have that should be used, and which competencies are not available but should be acquired?"
6. "Assume that the selected information items could be transferred to the community pharmacy. How should they be transferred?"
7. "We talked a lot about information transfer. Do you have other suggestions, how to facilitate care after discharge?"

The discussion was videotaped, to have a clear identification of the speakers on the audio line. Data saturation was not addressed. After a verbatim transcription of the discussion, a content analysis was performed inductively using a framework approach.<sup>28</sup> The transcript was fragmented and categorised by two investigators separately with MAXQDA (version 11.0.1, Foxit Software Company, Berlin).<sup>28</sup> Different fragmentation and categorisation of the data were discussed between researchers until consensus was reached. Statements within a category are summarised in the results section to provide the frequency of different topics discussed. They are presented in parentheses.

## Questionnaire

The questionnaire was developed by all authors according to the aims and inspired by findings of the focus group. Structure, question types and wording were discussed extensively. The final version included six subjects:



Table 1. Characteristics of the six focus group participants. Mean age was 47.3 years (SD=13.7).

Participants	Sex	Age [years]	Experience in community [years]	Position in pharmacy	Dispensing by physicians in the pharmacist's region
Participant 1	Female	40	15	Employee	No self-dispensing
Participant 2	Male	65	38	Owner	No self-dispensing
Participant 3	Male	30	5	Employee	No self-dispensing
Participant 4	Female	40	15	Manager	No self-dispensing
Participant 5	Male	47	15	Owner	Self-dispensing
Participant 6	Female	62	26	Employee	Self-dispensing

- a) Sociodemographic and pharmacy characteristics adapted to other Swiss surveys for comparability<sup>29-32</sup>;
- b) Estimated numbers and origin of prescriptions (The categorisation of hospital types was adapted from the Federal Office of Public Health reporting style<sup>33</sup>);
- c) Fulfilments of the fully presented Functions B and C of the Joint-FIP/WHO Guideline<sup>25</sup>, evaluated with a 5-point Likert-scale (very good, good, satisfactory, bad, very bad). For easier presentation in the results' section, the 5 points were symmetrically aggregated to 3 points;
- d) 28 items addressing information (derived from the focus group discussion), divided into four categories: therapy-related (A), health-related (B), care-related (C), and organisation-related information items (D), supplemented by two items on collaboration on an organisational level (E). They were evaluated on their availability by a 3-point Likert-scale (always or almost always, sometimes, never or almost never available), and on their usefulness by a 4-point Likert-scale (essential, desirable, neutral, not desirable<sup>34</sup>);
- e) Objectives for discharge optimisation derived from the focus group and presented in a single-choice question with respondents asked to choose one out of a possible five answers;
- f) An empty text field for additional comments.

The questionnaire was piloted by three focus group participants and two pharmacists with both research and practical hospital experience. After minor adjustments in wording and methodology, the questionnaire in German was translated forwards and backwards into French and Italian, the two most widespread of the four official Swiss languages after German. All translators were native speakers of the language they translated into, and resided within Switzerland, as proposed by Wild *et al.*<sup>35</sup> They were hospital or clinical pharmacists with experience in community pharmacies.

The questionnaire was formatted electronically (Flexiform 2.7.0, University of Basel) and sent by email to all managers of pharmacies belonging to the Swiss Pharmacist's Association (n=1348). A reminder was sent after 24 days and the survey was closed after 49 days. Data analysis was done with SPSS Statistics (IBM, version 22.0.0.0).

## RESULTS

Thematically similar results from the focus group discussion and the questionnaire are presented, related to each other, in the results' subsections. Subsections refer to the three aims. Pharmacists contributing to the focus group are named „participants“, while pharmacists answering the

questionnaire are called „respondents“. Characteristics of participants and respondents are shown in Table 1 and Table 2. Of 1348 questionnaires sent out, 194 (14.4%) were completed and returned.

### Current problems and roles

The study aimed to identify the community pharmacists' most important problems at hospital discharge. Focus group participants identified significant challenges within the current practice. Their workload and organisational barriers were addressed repeatedly (12 statements), which lead to waiting times for the discharged patients.

“The hospital [...] discharge is a huge problem, because it mostly happens during the weekends. And on weekends, the respective general practitioners are not available.” (P3)

“We telephoned for hours, because the doctor on call wasn't there anymore.” (P4)

The change of medication or brands was judged as a major safety issue for patients (19 statements):

Table 2. Characteristics of 194 questionnaire respondents and their pharmacies.	
<b>Respondents</b>	<b>n (%)</b>
Mean age; years [SD]	49.7 [10.8]
Female gender	98 (50.5)
Experience in community pharmacy	
< 2 years	2 (1.0)
2 - 5 years	11 (5.7)
5 - 10 years	16 (8.2)
10 - 20 years	35 (18.0)
> 20 years	130 (67.0)
<b>Pharmacies</b>	<b>n (%)</b>
Location	
City centre	47 (24.2)
Urban quartier	58 (29.9)
Agglomeration	37 (19.1)
Countryside	52 (26.8)
Pharmacist full-time equivalent	
< 100%	10 (5.2)
101 - 200%	111 (57.2)
201 - 300%	54 (27.8)
> 300%	19 (9.8)
Median prescriptions per month [SD] (5 invalid)	800 [1127]
Discharge prescriptions as percentage of all filled prescriptions	
0%	3 (1.5)
10%	120 (61.9)
25%	52 (26.8)
> 50%	19 (9.8)
Most frequent origin of discharge prescriptions	
Hospitals for centralised care (e.g. university hospitals)	113 (58.2)
Hospitals for basic care (e.g. regional hospitals)	76 (39.2)
Specialised clinics (e.g. rehabilitation, psychiatric clinics)	5 (2.6)



**Table 3.** Answers of questionnaire respondents about fulfilling Joint-FIP/WHO Guidelines on Good Pharmacy Practice. The five item Likert-scale was symmetrically aggregated to 3 items.

	(rather) good n (%)	satisfactory n (%)	(rather) bad n (%)
Function B: Manage patient medication therapy	37 (19.1)	47 (24.2)	110 (56.7)
Function C: Monitor patient progress and outcomes	20 (10.3)	31 (16.0)	143 (73.7)

"It has happened more than once that the same active ingredient is prescribed multiple times. The general practitioner prescribes, then you are admitted to the hospital, the discharge prescription comes back [...]." (P2)

Participants referred to the expectations of patients and other health care professionals. They experienced being assigned the role of a supplier only (2 statements):

"[...] the expectation when you enter a pharmacy is

that you have to get it [the medication] immediately. That's the expectation of my clients." (P5)

Participants considered the collaboration with other health professionals as one of their competencies, and ensuring the treatment continuity was emphasised as an important task. Confronted with the complete Functions B and C out of Role 2 from the Joint-FIP/WHO-Guidelines, 56.7% and 73.7% of questionnaire respondents respectively judged their ability to fulfil these roles as (rather) bad (Table 3).

**Table 4.** Questionnaire results about availability (1<sup>st</sup>-3<sup>rd</sup> column) and usefulness (4<sup>th</sup>-7<sup>th</sup> column) of categories A-D addressing information and organisational collaboration (n=194).

	(almost) always available	sometimes available	(almost) never available	essential	desirable	neutral	not desirable	rated as useful by focus group
<b>A: Therapy-related information</b>								
Complete patient identification, e.g. age	<b>181</b>	12	1	<b>177</b>	15	1	1	n.r.
Complete, up to date medication list	56	<b>117</b>	21	<b>154</b>	39	1	-	5
Therapy on admission	34	<b>90</b>	70	51	<b>116</b>	26	1	6
Therapy changes in hospital	24	<b>97</b>	73	<b>110</b>	79	4	1	6
Reasons for therapy changes	6	33	<b>155</b>	80	<b>102</b>	11	1	1
Therapy duration	82	<b>104</b>	8	<b>169</b>	24	1	-	6
Therapy goals	6	38	<b>150</b>	49	<b>127</b>	16	2	6
Therapy indication	8	51	<b>135</b>	54	<b>124</b>	14	2	4
Off-label use is marked	10	41	<b>143</b>	<b>127</b>	57	9	1	6
Emergency limits, e.g. blood pressure	8	43	<b>143</b>	89	<b>93</b>	10	2	6
Interventions performed in hospital	16	26	<b>152</b>	53	<b>118</b>	20	3	4
Information about if supply was given to the patient (n=193)	18	40	<b>135</b>	52	<b>108</b>	23	1	4
<b>B: Health-related information</b>								
Reason for hospital admission	6	43	<b>145</b>	28	<b>127</b>	35	4	4
Major and minor diagnoses	1	28	<b>165</b>	43	<b>129</b>	20	2	3
Description of wounds and their treatment	1	42	<b>151</b>	56	<b>117</b>	20	1	6
Allergies	7	72	<b>115</b>	<b>143</b>	48	3	-	6
Laboratory values to control therapy	-	20	<b>174</b>	26	<b>108</b>	51	9	6
Laboratory values to control side effects	1	7	<b>186</b>	24	<b>99</b>	59	12	6
Laboratory values of kidney and liver	1	8	<b>185</b>	27	<b>85</b>	69	13	6
<b>C: Care-related information</b>								
Next health care provider appointment	3	82	<b>108</b>	45	<b>124</b>	23	2	4
Further care organisation, e.g. nurse visits	4	68	<b>122</b>	35	<b>140</b>	16	3	6
<b>D: Organisation-related information</b>								
Contact information of treating personnel	85	<b>96</b>	13	<b>142</b>	49	2	1	6
Contact information of hospital pharmacy (n=193)	46	59	<b>88</b>	40	<b>105</b>	46	3	n.r.
Hospital's formulary	10	48	<b>136</b>	22	<b>117</b>	53	2	n.r.
Hospital pharmacy's documents e.g. lists about Tablet crushing	20	66	<b>108</b>	45	<b>116</b>	30	3	3
Hospital's compounding formulations	23	<b>103</b>	68	56	<b>125</b>	12	1	n.r.
Hospital's guidelines on diseases	4	39	<b>151</b>	35	<b>125</b>	32	2	n.r.
Information about how to order special medicines	20	62	<b>112</b>	40	<b>113</b>	41	-	4
<b>E: Organisational collaboration</b>								
Hospitals give supply to patients at discharge	15	83	<b>96</b>	52	<b>108</b>	28	6	4
Shared education with hospital personnel	6	12	<b>176</b>	9	<b>116</b>	58	11	3

Results are supplemented with ratings with green cards in the focus group (n=6, last column). Some information was not proposed for rating and therefore not rated (n.r.) during focus group. The most frequent answers are presented in bold numbers.



Table 5. Objectives of pharmacists for potential discharge optimisations, stated in the focus group (n=6) and in the questionnaire (single choice question, n=194).

	Statements in focus group; n (%)	Answers in questionnaire; n (%)
Improved continuity of supply	22 (32.4)	48 (24.7)
Improved medical treatment (e.g. safety)	19 (27.9)	63 (32.5)
Reduction of work load	12 (17.6)	1 (0.5)
Improved counseling and pharmaceutical care	11 (16.2)	77 (39.7)
Improved patient satisfaction	4 (5.9)	5 (2.6)

Good or rather good fulfilment was declared by 19.1% and 10.3% of respondents respectively.

### Information needs

The 28 different information items from the questionnaire (A-D) are presented in Table 4. All items were rated as being less accessible than required, except for one respondent who reported exceptionally good access. Furthermore, participants from the focus group were highly interested in obtaining more information (rating of usefulness by green cards, Table 4).

The category of therapy-related information (A) was considered the most useful by focus group participants (24 statements), e.g. specifications of the prescription like therapy duration or "off-label" use and medication changes.

"[...] we have a lot of work to reconstruct what changed in the hospital and what didn't. It needs a lot of work." (P1)

Changes of brands were highlighted to be frequent. Participants mentioned that for consumers registered in their pharmacy, the medication history allows them to reconstruct changes. But, if the prescription contains only a selection of medication – those which have to be obtained at the pharmacy – and not the whole medication list, missing products might be interpreted as discontinued.

"What troubles me is retracing what has been stopped [...]. So, was phenprocoumon stopped or was it forgotten on the prescription or is only acetylsalicylic acid the current treatment [...]. That is a big problem [...]." (P1)

All participants suggested that prescriptions should be specified with "stopped" or "new since". The reasons for therapy changes were desired only by one participant, others indicating they would be unsure how to deal with such clinical details. They state lacking expertise in interpreting and validating the decisions of other health care professionals. Therefore, they thought the knowledge that there was a change would suffice. This is congruent with the answers to the questionnaire, where 110 (56.7%) respondents stated to be satisfied knowing that there was a change performed, and 80 (41.2%) respondents judged the reason for the change as essential information.

Focus group participants complained about insufficient information on intended unusual dosages or "off-label" use. All six said that the provision of explicit specification like the Latin "sic" would be useful (10 suggestions). This would save pharmacists from "running after these things" (P1). 127 of 194 (65.4%) questionnaire respondents supported this statement about specifications for "off-label" use.

Concerning the category of health-related information (B), all participants stated that information about patients' wound care would be helpful. Participants felt competent in wound management, but said that their knowledge could be extended. Opinions about the importance of other health-related information like diagnoses were controversial between the two groups. Laboratory values were desired by all participants, but only with a clear purpose, e.g. to detect side effects. They confirmed being familiar with common values like blood glucose levels, however, they felt incompetent in judging the clinical relevance of uncommon values and called for further training. Allergy information was rated as essential by all six participants. In the questionnaire, 79 (40.7%) respondents declared to have at least sometimes access to allergies, and 191 (98.4%) desired access.

Regarding care-related information (C), all six participants said it is important to know the follow-up procedure (10 suggestions), for example, who is caring for the patient after discharge. This was supported by 175 of 194 (90.2%) questionnaire respondents, whilst only 19 (9.8%) had a neutral or opposing opinion.

### Objectives and strategies for discharge optimisation

An urgent need for optimisation of the discharge process was claimed by all focus group participants, and different objectives were suggested. A reduction of workload was an objective often mentioned, with regard to their own work (12 statements, Table 5). But for patients, they saw treatment continuity as the major objective (22 statements), with pharmacists feeling responsible for bridging patients' medication supply gaps. In the questionnaire, respondents chose better pharmaceutical counselling and care to be targeted by any discharge optimisation, whereas the workload was not a priority in this single-choice question (Table 5).

Different strategies to achieve the stated objectives were found. Besides the information content, its transfer and display were discussed in the focus group. Participants emphasised the need for new information technology like electronic patient records (17 statements), but were concerned about their confidentiality. Therefore, paper-based solutions were requested (8 statements). The questionnaire respondents' major preference was for electronic methods (52 of 194, 26.8%, Table 6), this was especially true for respondents with 5 - 10 years of experience. The less experienced the respondents were, the more likely they preferred the prescription. This and other paper-based solutions like summaries or medication charts were also highly rated as acceptable methods by the respondents (Table 6). The timing of information transfer was judged to be crucial. Participants suggested that prescriptions with additional information should be sent to



Table 6. Preferred transfer methods and display of information (single-choice question, n=194 respondents).	
Medium	n (%)
as electronically accessible record	52 (26.8)
as separate, special form	49 (25.3)
on the discharge prescription	47 (24.2)
on the medication chart	26 (13.4)
on the discharge summary	18 (9.3)
other (e.g. personal message)	2 (1.0)
Design	n (%)
Addition of structured information (e.g. as checkboxes)	82 (42.3)
Specification of existing information (e.g. 'sic', 'stop' for certain prescription lines)	72 (37.1)
Addition of free text	36 (18.6)
Others (e.g. pictograms, electronic patient record)	4 (2.0)

the pharmacy before discharging the patient (16 statements).

Concerning display, participants noted that it should be possible to write the information simply and briefly (6 statements). Structured information was prioritised over free text by 154 questionnaire respondents (Table 6), which was similar to the focus group.

"In the end, to be realistic, you have to bring it in a form that also saves time for the doctor." (P3)

Participants preferred to receive concise and clearly arranged information over long summaries, in order to find the essential into information quickly (10 statements).

"I don't want to download a whole patient record and then to pick out what is relevant for me." (P4)

Besides optimisation through an enhanced information transfer regarding patient therapy, health and care, participants expressed a need for general collaboration between hospitals and pharmacies. Questionnaire respondents stated a desire for the provision of organisation-related information (D, Table 4). Focus group participants repeatedly stated that they feel dependent on hospitals. They lack information about hospital's guidelines and formularies to adapt their stock (16 statements). Participants described further initiatives:

"What I experienced more than once and what I greatly appreciated was: When [...] the doctor already knew that it was a special product or an uncommon medicine, he called before discharging the patient [...] and asked if we had it in stock." (P3)

Further suggestions for the provision of organisation-related information were to get lists of medicines prescribed for "off-label" use, to get instructions on extemporaneously compounding formulations, and on where to order foreign medication. Pharmacists also called for contact information of the hospital pharmacy staff. Four participants stated they would appreciate if the hospitals provided supply to prevent therapy gaps, and it would be good to know if a patient already had received supply on discharge. They called for shared education to enhance collaboration on an organisational level (E, Table 4).

When asked for other optimisation ideas in a text field of the questionnaire, respondents again mentioned already discussed subjects. These were namely the importance of knowing medication changes for the patient's safety and the advantages of information being available early. No new ideas were raised.

## DISCUSSION

This is the first published study evaluating current practices of information transfer between hospitals and community pharmacies in Switzerland, in direct comparison with the needs and objectives expressed by community pharmacists. To summarise, community pharmacists stated to have limited access to essential information, and they called for further therapy-related, health-related, care-related, and organisation-related information. A need for discharge optimisation and organisational collaboration was claimed by both the participants in focus group discussion and the community pharmacists responding to the questionnaire. Better counselling, treatment continuity for patients, and reduced workload for pharmacists were identified as major objectives.

In particular, this study revealed that community pharmacists see the hospital discharge as an important step in care transition. Participants and respondents complained about a lack of information, which impairs patient care in daily practice. These challenges are as well described in the literature.<sup>20,36</sup> Both groups reported treatment gaps to be a frequent consequence. To compensate, community pharmacists invest a lot of time and effort in avoiding therapy gaps and in fulfilling their role as therapy managers. However, questionnaire respondents who were confronted with the Joint-FIP/WHO Guideline on Good Pharmacy Practice stated that they do fulfil their role (rather) badly. Focus group participants felt capable of doing more than just dispensing medicine, and they wished to apply their expertise more often. A comparison of the provision of pharmaceutical care by community pharmacists across Europe revealed over-average scores for Switzerland e.g. in direct patient care activities and in patient monitoring.<sup>31</sup> These conflicting findings may be due to methodology that limits the value of self-reported behaviour. It would be of interest to study how other European pharmacists judge their role fulfilment if confronted with the Joint-FIP/WHO Guideline. Nevertheless, our study indicates a high need for better exchange of information at discharge, and revealed the potential of community pharmacists to improve treatment continuity.

Regarding content of the information, four categories (A-D) evolved from the focus group discussion (Table 4). The availability of the different items varied significantly, and it differed also among pharmacies. This is possibly due to special settings which combine a GP practice and a pharmacy; a new development in Switzerland. Outstanding examples of pharmacies with extended collaboration were



also described before<sup>22</sup>, but it is unknown if specialised pharmacies with a GP practice in the community pharmacy responded to the questionnaire. It needs to be taken into account that respondents may have answered for general availability of information, and not always specifically for recently discharged patients. However, all respondents deplored insufficient quantity and quality of information, as well as delayed information transfer.

Looking at the categories (A-D) in detail reveals a mixed pattern. Therapy-related items (A) like patient identification, therapy duration or up-to-date medication lists were rated with the highest availability. In accordance with that, they are also valued the most essential by the respondents. During a hospital stay, therapy changes such as new or altered treatments are common.<sup>1</sup> However, our results show that they are usually not communicated, which makes medication reconciliation labour-intensive. Therefore, detailed information on changes was strongly desired, as well as a complete list containing all medicines a patient should use. Other studies had similar findings, where pharmacists and GPs also stated a need for more information about medication changes.<sup>6,16</sup> Surprisingly, information about reasons for changes was not as desired as the information that there was a change. This is congruent with a Belgian study.<sup>19</sup> Pharmacists seem not to reevaluate clinical decisions, which may be due to a lack of time or limited clinical expertise. Regarding stop orders, focus group participants repeatedly stated that insufficient transfer of such information may put patients at risk. The explicit need for this information was supported by literature, where 76% of interviewed American pharmacists saw a need for this information.<sup>18</sup> Likewise, this was put on a "wish list" by Kennelty *et al.*<sup>6</sup> A second therapy-related focus was "off-label" use. It usually remains hidden because diagnoses are rarely accessible for community pharmacists. In this situation the indication would be essential in order to check the appropriateness of the prescription.

Information items categorised as health-related (B) are almost never available. Within those items, allergies were accessible to some responding pharmacies. Allergy information was considered essential by most of the respondents, matching results of previous studies.<sup>18,19</sup> Interestingly, other health-related items like kidney function results were significantly less desired. This may be due to a lack of experience in judging the appropriateness of individual doses. This low interest in clinical details opposes earlier statements, that pharmacists would rather be seen as competent health care professionals. Although, focus group participants called for further education in these topics, for example evaluation of laboratory results and wound care.

Besides dispensing and counselling a patient, pharmacists have a role in coordinating patient care.<sup>25</sup> Therefore, care-related information (C) would be helpful but is currently only sometimes available. The knowledge of a patient's social situation, the needs for support in the management of medicines or the information about the next appointment with the GP would enable community pharmacists to fulfil their role more adequately. Our findings underline similar results from other studies, where

the date of the next GP appointment or knowing how the patient manages their medication at home were highly rated.<sup>6,19</sup> With this information, coordinating care within the interdisciplinary team would be easier for pharmacists.

In both study parts, different objectives for discharge optimisation evolved. During focus group discussion, there was a desire for reducing the pharmacist's workload, whilst in the questionnaire, more patient-oriented than pharmacist-oriented objectives were chosen. This discrepancy may be due to methodological reasons (free discussion versus single-choice question). However, objectives expressed by participants and respondents were similar to a Belgian and a Swiss intervention study, where continuity of treatment was targeted.<sup>19,37</sup> To achieve the above mentioned optimisations, different strategies were discussed. Participants and respondents suggested an enhanced information transfer from hospital to community pharmacy. No other substantial concepts were discussed when participants were asked for additional ideas, highlighting this as a priority issue.

Pharmacists in both settings insisted on an early transfer of information. They preferred concise and clearly structured information. A well-designed form would help hospitals to implement such documentation, and pharmacists to read it efficiently. While questionnaire respondents prioritised electronic tools, focus group participants preferred paper-based solutions like handovers, because they were afraid of any implementation delay with a new system. Surprisingly, there was no clear trend of younger pharmacists preferring electronic tools. However, electronic platforms were welcomed for organisation-related information (D). Such organisation-related information was sometimes or seldom accessible, although rated as very helpful. As a general impression from the focus group discussion, pharmacists see their surrounding hospitals as "lucky dips" or "black boxes", not knowing what happens inside and being surprised by what comes out. Similar opinions have been collected among Swiss GPs.<sup>13</sup> Personal knowledge of the treating personnel may enhance collaboration.<sup>6,19</sup> Through extended collaboration on an organisational level (E), e.g. shared education, this impression of GPs and community pharmacists may be diminished.

Some limitations have to be taken into account. This was a mixed method approach leading to qualitative, and subsequent quantitative results. Country- and population-specific characteristics like self-dispensing may limit applicability to other health care systems. There may be a selection bias for pharmacists, however, age<sup>29,38</sup>, gender<sup>29,30,38</sup> and experience<sup>31</sup> of respondents, as well as location<sup>29,31</sup> and size<sup>32,38</sup> of pharmacies, were very similar in both groups compared to other studies. There was no evaluation of different pharmacy settings, which would have been useful to compare. Response to the questionnaire was rather low compared to response rates of 43 - 57.4% in similar settings.<sup>29-31,38</sup> This may be due to an overload of surveys being sent to this population lately and the fact that the questionnaire was sent to pharmacies and not to personal email accounts. A response bias cannot be excluded. The mixed method approach helped to enrich the knowledge gained from the 194 respondents, enabling a broader insight in the subject. Through focusing on

information transfer, other important strategies of discharge optimisation may have gone underreported.

## CONCLUSIONS

To conclude, insufficient communication at hospital discharge may cause therapy interruptions and introduce additional workload for community pharmacists. Although the very essential therapy-related information is sometimes available for Swiss community pharmacists, desired health-related and care-related information is mostly inaccessible. Interviewed community pharmacists called for enhanced collaboration to support patient safety, mainly through information transfer. Its layout was hoped to be concise and well-structured to enable quick and easy reading. No clear preference for a transfer method was identified. We recommend that any optimisation of hospital discharge should be adapted to community pharmacists' competencies and needs. With this, they would possibly be more able to support patients in their therapy to their best.

## ACKNOWLEDGEMENTS

Samuel Allemann (support during focus group, revision of the questionnaire draft), Laurie Bochatay, Marco Ceppi, Michele Eicher and Hélène Schaller (translation of the questionnaire), Andie Pilot and Samuel Bucheli (revising the draft), William Caddy (proof reading the manuscript), and Dr. Peter Wiedemeier (enabling the study at cantonal hospital of Baden).

## CONFLICT OF INTEREST

We attest that we have no financial or other relationships that could be construed as a conflict of interest for this study.

## FUNDING

None.

## References

1. Harris CM, Sridharan A, Landis R, Howell E, Wright S. What happens to the medication regimens of older adults during and after an acute hospitalization? *J Patient Saf.* 2013;9(3):150-153. doi: [10.1097/PTS.0b013e318286f87d](https://doi.org/10.1097/PTS.0b013e318286f87d)
2. Viktil KK, Blix HS, Eek AK, Davies MN, Moger TA, Reikvam A. How are drug regimen changes during hospitalisation handled after discharge: a cohort study. *BMJ Open.* 2012;2(6). doi: [10.1136/bmjopen-2012-001461](https://doi.org/10.1136/bmjopen-2012-001461)
3. Forster AJ, Murff HJ, Peterson JF, Gandhi TK, Bates DW. The incidence and severity of adverse events affecting patients after discharge from the hospital. *Ann Intern Med.* 2003;138(3):161-167.
4. Neeman M, Dobrinas M, Maurer S, Tagan D, Sautebin A, Blanc AL, Widmer N. Transition of care: A set of pharmaceutical interventions improves hospital discharge prescriptions from an internal medicine ward. *Eur J Intern Med.* 2017;38:30-37. doi: [10.1016/j.ejim.2016.11.004](https://doi.org/10.1016/j.ejim.2016.11.004)
5. Roughead EE, Kalisch LM, Ramsay EN, Ryan P, Gilbert AL. Continuity of care: when do patients visit community healthcare providers after leaving hospital? *Intern Med J.* 2011;41(9):662-667. doi: [10.1111/i.1445-5994.2009.02105.x](https://doi.org/10.1111/i.1445-5994.2009.02105.x)
6. Kennelty KA, Chewning B, Wise M, Kind A, Roberts T, Kreling D. Barriers and facilitators of medication reconciliation processes for recently discharged patients from community pharmacists' perspectives. *Res Social Adm Pharm.* 2015;11(4):517-530. doi: [10.1016/j.sapharm.2014.10.008](https://doi.org/10.1016/j.sapharm.2014.10.008)
7. Geurts MM, van der Flier M, de Vries-Bots AM, Brink-van der Wal TI, de Gier JJ. Medication reconciliation to solve discrepancies in discharge documents after discharge from the hospital. *Int J Clin Pharm.* 2013;35(4):600-607. doi: [10.1007/s11096-013-9776-x](https://doi.org/10.1007/s11096-013-9776-x)
8. Cavrenne P, Spinewine A. Continuity in patient care upon hospital discharge: evaluation of a clinical pharmacy discharge form for community pharmacists. *J Pharm Belg.* 2008;63(3):69-72.
9. McElhiney L. Educating the caregiver and community pharmacist to facilitate provision of consistent compounded medications from the inpatient to ambulatory settings. *Int J Pharm Compd.* 2003;7(5):394-398.
10. Brookes K, Scott MG, McConnell JB. The benefits of a hospital based community services liaison pharmacist. *Pharm World Sci.* 2000;22(2):33-38.
11. Ni W, Colayco D, Hashimoto J, Komoto K, Gowda C, Wearda B, McCombs J. Impact of a pharmacy-based transitional care program on hospital readmissions. *Am J Manag Care.* 2017;23(3):170-176.
12. Braund R, Coulter CV, Bodington AJ, Giles LM, Greig AM, Heaslip LJ, Marshall BJ. Drug related problems identified by community pharmacists on hospital discharge prescriptions in New Zealand. *Int J Clin Pharm.* 2014;36(3):498-502. doi: [10.1007/s11096-014-9935-8](https://doi.org/10.1007/s11096-014-9935-8)
13. Tandjung R, Rosemann T, Badertscher N. Gaps in continuity of care at the interface between primary care and specialized care: general practitioners' experiences and expectations. *Int J Gen Med.* 2011;4:773-778. doi: [10.2147/IJGM.S25338](https://doi.org/10.2147/IJGM.S25338)
14. Adam H, Niebling WB, Schott G. [The information about discharge medication: what do general practitioners need?] *Dtsch Med Wochenschr.* 2015;140(8):e74-e79. doi: [10.1055/s-0041-101401](https://doi.org/10.1055/s-0041-101401)
15. Bally K, Lingenhel S, Tschudi P. [High-quality hospital discharge summaries - general practitioners expectations]. *Ther Umsch.* 2012;69(1):5-7. doi: [10.1024/0040-5930/a000243](https://doi.org/10.1024/0040-5930/a000243)
16. Karapinar F, van den Bemt PM, Zoer J, Nijpels G, Borgsteede SD. Informational needs of general practitioners regarding discharge medication: content, timing and pharmacotherapeutic advice. *Pharm World Sci.* 2010;32(2):172-178. doi: [10.1007/s11096-009-9363-3](https://doi.org/10.1007/s11096-009-9363-3)
17. Kunz R, Wegscheider K, Guyatt G, Zielinski W, Rakowsky N, Donner-Banzhoff N, Muller-Lissner S. Impact of short evidence summaries in discharge letters on adherence of practitioners to discharge medication. A cluster-randomised controlled trial. *Qual Saf Health Care.* 2007;16(6):456-461. doi: [10.1136/qshc.2006.020305](https://doi.org/10.1136/qshc.2006.020305)



18. Munday A, Kelly B, Forrester JW, Timoney A, McGovern E. Do general practitioners and community pharmacists want information on the reasons for drug therapy changes implemented by secondary care? *Br J Gen Pract.* 1997;47(422):563-566.
19. Claeys C, Dufrasne M, De Vriesse C, Nève J, Tulkens P, Spinewine A. [Information transmission to the community pharmacist after a patient's discharge from the hospital: setting up of a written medication discharge form, prospective evaluation of its impact, and survey of the information needs of the pharmacists]. *J Pharm Belg.* 2015;(1):42-54.
20. Michel B, Hemery M, Rybarczyk-Vigouret MC, Wehrle P, Beck M. Drug-dispensing problems community pharmacists face when patients are discharged from hospitals: a study about 537 prescriptions in Alsace. *Int J Qual Health Care.* 2016;28(6):779-784. doi: [10.1093/intqhc/mzw111](https://doi.org/10.1093/intqhc/mzw111)
21. Rutter P, Ramsbottom H, Fitzpatrick R. Community pharmacist perceptions of delivering post-hospital discharge Medicines Use Reviews for elderly patients. *Int J Clin Pharm.* 2017;39(1):33-36. doi: [10.1007/s11096-016-0400-8](https://doi.org/10.1007/s11096-016-0400-8)
22. Urban R, Paloumpi E, Rana N, Morgan J. Communicating medication changes to community pharmacy post-discharge: the good, the bad, and the improvements. *Int J Clin Pharm.* 2013;35(5):813-820. doi: [10.1007/s11096-013-9813-9](https://doi.org/10.1007/s11096-013-9813-9)
23. Al-Rashid SA, Wright DJ, Reeves JA, Chrystyn H. Opinions about hospital discharge information. Part 2. Community pharmacists. *J Soc Adm Pharm.* 2001;18(4):129-135.
24. De Pietro C, Camenzind P, Sturny I, Crivelli L, Edwards-Garavoglia S, Spranger A, Wittenbecher F, Quentin W. Switzerland Health System Review. *Health Systems in Transition.* 2015;17(4):1-288.
25. World Health Organization. Joint FIP/WHO Guidelines on Good Pharmacy Practice: Standards for quality of pharmacy services. Geneva 2011. [http://fip.org/www/uploads/database\\_file.php?id=331&table\\_id=](http://fip.org/www/uploads/database_file.php?id=331&table_id=) (accessed 9 June 2017).
26. Morgan DL. Focus groups. *Ann Rev Sociol.* 1996;22(1):129-152.
27. Bundesversammlung der Schweizerischen Eidgenossenschaft. Bundesgesetz über die Forschung am Menschen (Humanforschungsgesetz). 2011. <https://www.admin.ch/opc/de/official-compilation/2013/3215.pdf> (accessed 18 January 2017).
28. Rabiee F. Focus-group interview and data analysis. *Proc Nutr Soc.* 2004;63(4):655-660.
29. Indermitte J, Erba L, Beutler M, Bruppacher R, Haefeli WE, Hersberger KE. Management of potential drug interactions in community pharmacies: a questionnaire-based survey in Switzerland. *Eur J Clin Pharmacol.* 2007;63(3):297-305. doi: [10.1007/s00228-006-0237-5](https://doi.org/10.1007/s00228-006-0237-5)
30. Zehnder S, Beutler M, Bruppacher R, Ehrenhofer T, Hersberger KE. Needs and use of drug information sources in community pharmacies: a questionnaire based survey in German-speaking Switzerland. *Pharm World Sci.* 2004;26(4):197-202.
31. Hughes CM, Hawwa AF, Scullin C, Anderson C, Bernsten CB, Bjornsdottir I, Cordina MA, da Costa FA, De Wulf I, Eichenberger P, Foulon V, Henman MC, Hersberger KE, Schaefer MA, Sondergaard B, Tully MP, Westerlund T, McElnay JC. Provision of pharmaceutical care by community pharmacists: a comparison across Europe. *Pharm World Sci.* 2010;32(4):472-487. doi: [10.1007/s11096-010-9393-x](https://doi.org/10.1007/s11096-010-9393-x)
32. Schweizerischer Apothekerverband pharmasuisse. RoKa Kurzbericht für das Geschäftsjahr 2014. Bern 2015. <http://www.pharmasuisse.org/data/docs/de/2895/RoKA-Kurzbericht-2014.pdf?v=1.0> (accessed 9 June 2017).
33. Federal Office of Public Health. Kennzahlen der Schweizer Spitäler. Bern: Bundesamt für Gesundheit; 2013. <http://www.webcitation.org/6kOFI9HT1> (accessed 9 September 2016).
34. Serfontein J, Dodwell D, Patel P. Psychiatric discharge summaries: what do general practitioners want? *Ment Health Fam Med.* 2011;8(3):167-171.
35. Wild D, Grove A, Martin M, Eremenco S, McElroy S, Verjee-Lorenz A, Erikson P. Principles of Good Practice for the Translation and Cultural Adaptation Process for Patient-Reported Outcomes (PRO) Measures: report of the ISPOR Task Force for Translation and Cultural Adaptation. *Value Health.* 2005;8(2):94-104. doi: [10.1111/j.1524-4733.2005.04054.x](https://doi.org/10.1111/j.1524-4733.2005.04054.x)
36. Ensing HT, Koster ES, Berkel PI, Dooren AA. Problems with continuity of care identified by community pharmacists post-discharge. *J Clin Pharm Ther.* 2017;42(2):170-177. doi: [10.1111/jcpt.12488](https://doi.org/10.1111/jcpt.12488)
37. Kaestli LZ. Amélioration de la continuité des soins pharmaceutiques aux patients pédiatriques sortant de l'hôpital. Geneva: Faculté des Sciences de l'Université de Genève, Université de Genève; 2014.
38. Schwappach DL, Meyer Massetti C, Gehring K. Communication barriers in counselling foreign-language patients in public pharmacies: threats to patient safety? *Int J Clin Pharm.* 2012;34(5):765-772. doi: [10.1007/s11096-012-9674-7](https://doi.org/10.1007/s11096-012-9674-7)

