

Review of Care Transition Records and Their Transmission Process in Nursing Facilities and Hospitals in Germany – Results of an Online Questionnaire

Elisabeth Veronica MESS^{a,1}, Sabahudin BALIC^a, Lisa DAUFRATSHOFER^b, Lukas KLEYBOLTE^a, Matthias REGNER^a, Nadine SEIFERT^c, Sabrina TILMES^b, Ann-Kathrin WAIBEL^c, Walter SWOBODA^c, Alexandra TEYNOR^a and Andreas MAHLER^b

^a*Institute for Agile Software Development, Augsburg University of Applied Sciences, Augsburg, GERMANY*

^b*University Hospital, Augsburg, Augsburg, GERMANY*

^c*DigiHealth Institute, University of Applied Sciences, Neu-Ulm, GERMANY*

Abstract. A quantitative approach in the form of an online questionnaire was used to identify challenges and desires related to the Care Records Transmission Process and Care Transition Records (CTR). The questionnaire was sent to nurses, nursing assistants, and trainees working in ambulatory, acute inpatient, or long-term care settings. The survey revealed that creating CTRs is time-consuming, and the lack of standardization of CTRs makes the process even more cumbersome. In addition, most facilities transmit the CTR by physically handing it over to the patient or resident, resulting in little or no preparation time for the individual(s) receiving care. The key findings also suggest that most respondents are only partially satisfied with the completeness of the CTRs and that they must conduct additional interviews to obtain missing information. However, most respondents hoped that digital transmission of CTRs would lead to less administrative burden and that standardization of CTRs would be encouraged.

Keywords. Online Questionnaire, Care Transition Records, Care Transition Process

1. Introduction

Given the shortage of qualified nursing staff in Germany and the increasing number of people needing care, it is necessary to make the Care Transition Process more efficient. One example is the transfer of patients to other institutions. Digital support of these processes seems to be a promising approach, as many healthcare processes are paper-based. Literature research was conducted to identify current problems related to Care Transition Records (CTR) and the CTR-Transmission Process: (1) *The time-consuming creation of CTRs* [1] [2], (2) *the lack of a standard format for CTRs* [3]–[5], (3)

¹ Elisabeth Veronica Mess, An der Hochschule 1, 86161 Augsburg, Germany; E-mail: elisabethveronica.mess@hs-augsburg.de, ORCID ID: <https://orcid.org/0000-0003-1205-9141>.

proprietary software solutions and formats to create CTRs and (4) *late timing of the CTR transmission* as shown in [6]. Eleven observations in a Bavarian hospital and care facilities supported these findings and provided additional information. The care staff is interrupted several times (e.g., telephone calls) while transferring the CTR data into their in-house system. The current process requires increased concentration. In all observations, the CTR has not arrived until after the patient arrived. Therefore, the nurse was unable to prepare for the patient (prepare the room and order medications if necessary) as described in [6]. An online questionnaire was planned and conducted to learn more about the nurse practitioners' work in the context of the German CTR-Transfer Process.

2. Methodology

A quantitative approach - an online questionnaire - was chosen to reach as many nursing staff in Germany as possible to generate meaningful results. The quantitative online survey aimed to identify challenges and desires associated with the CTR-Transmission Process. Nurses, nursing assistants, and trainees working in ambulatory-, acute inpatient- (e.g., hospitals), or long-term care settings (e.g., nursing facilities) were surveyed.

We formulated inclusion and exclusion criteria: nurses over 18 years of age and familiar with the CTR-Transmission Process were included in the survey. The quantitative online survey was conducted online from February 11 to April 30, 2022, using the open-source software LimeSurvey. A data collection and storage server were hosted at Augsburg University of Applied Sciences. The collected data was anonymized. The questionnaire was constructed partly based on literature knowledge and in iterative loops by the project team, consisting of developers, care managers, and experts of Ethical Legal Social Issues (ELSI). In addition, some questions could be taken from the validated survey tool COPSOQ as provided in [7]. In addition, a pre-test was conducted to evaluate the developed instrument before final use and to match the selected sample in terms of comprehensibility, as described in [8]. Invitations to participate were sent out by e-mail to the professional and institutional mailing lists of the project team within Germany. An ethics application was submitted to the Joint Ethics Committee of the Universities of Bavaria (GEHBa), and a positive vote was obtained (GEHBa-202107-V-028, Dr. Martin Schmieder). The analysis of the collected data was carried out by the statistical analysis program IBM Statistical Package for Social Sciences in version 28.0.0.0. Since the questionnaire contained closed and open-ended questions, the answers from the free-text fields had to be categorized using Microsoft Excel. Identical or similar responses from study participants were grouped into categories for clarity. In addition, the collected data material was initially checked for erroneous entries and, if necessary, cleaned up as provided in [9]. That was followed by the data analysis, focusing on vital descriptive figures. The results are presented in relative and absolute frequencies.

3. Results

In the following, the key findings of the online questionnaire are listed. The sample size was $n=33$.

3.1. Key Finding 1 - Transmission/transfer of the CTR

Most facilities transmit the CTR by physically handing it to the patient or resident (82%). The facility providing follow-up care thus only receives the CTR when the person arrives. This results in a shortened or no preparation time for the person(s) needing care. That is equivalent to the results from field observations already conducted in the project with cooperating care facilities. Another less frequent means of transfer is by fax (24%).

3.2. Key Finding 2 – Creation of the CTR

The manual transfer of the CTR into the own system was reported to take, on average, 45 minutes. Over half of all participants felt that creating a CTR in their in-house system was time-consuming (61 %). In addition, none of the participants indicated that the integration is captured automatically.

3.3. Key Finding 3 - Standardization/completeness

The majority of participants (70 %) are only partially satisfied with the completeness of the CTRs, as they are only frequently (27 %) to sometimes completely (42 %) filled out. In addition, most test persons said they had to conduct additional conversations (resident/patient conversation 76 %, conversations with relatives or caregivers 76 %, or telephone calls 76 %) to obtain missing information.

3.4. Key Finding 4 - Future/hope/concerns

70 % of the respondents expressed no concerns about the digital transmission of the CTR (cross-facility dispatch and automatic integration into the in-house system). Most respondents hope for less administrative effort with digital transmission of the CTRs (72 %). Some subjects indicated that they favored the standardization of CTRs (55 %).

4. Discussion

At the beginning of the research project, we collected results through a literature search and observations in facilities. The goal was to examine these quantitatively and to identify measurements confirming or refuting individual problems or opportunities. The study's key findings show that the CTR transfer process is time-consuming, lacks standardization, and is often incomplete, resulting in additional conversations to obtain missing information. In addition, most facilities transmit the CTR by handing it physically over to the patient or resident, which results in little or no preparation time for the person(s) in need of care.

The online survey results show similar problems to those already identified in the initial literature search and observations. Again, this emphasizes the urgency to address these problems in an iterative and user-centric approach and develop digital solutions.

Due to the resurgence of COVID-19 cases in healthcare facilities, only 33 participants can be attributed. However, the results do support the findings previously collected.

5. Conclusion

This paper highlights the professional challenges nurses face when creating and transmitting CTRs. In the age of digital transformation, the responsibility for a successful transmission should not lie on an error-prone paper-based CTR. For example, an interoperable and digital solution would make patient transition more convenient and efficient, significantly reducing the professionals' workload. In addition, standardizations can be set, and thus the CTR - Transmission Process can be made sustainable. Therefore, earlier arrival of the CTRs could ensure that the organizational effort and the psychological burden decrease as the nurse has more preparation time for the resident/patient.

6. Acknowledgements

This research is part of the project CARE REGIO, funded by the Bavarian State Ministry of Health and Care under grant number MGP- 2101-0004.

References

- [1] Vogel H, Ahnert J, Holried A, "Optimierung des einheitlichen Entlassungsberichts in der medizinischen Rehabilitation der Deutschen Rentenversicherung." <https://www.psychotherapie.uni-wuerzburg.de/forschung/entlassbericht-drv.html> (accessed Apr. 05, 2022).
- [2] Ahnert J, Ladwig J, Holderied A, Brüggemann S, Vogel H, "Optimierung des Reha-Entlassungsberichts der Deutschen Rentenversicherung – die Sichtweisen der Adressaten bzw. Nutzer," *Das Gesundheitswesen*, Feb. 2014;76(06):351–358. doi: 10.1055/s-0033-1348224.
- [3] Fachinger U, Mähs M, "Digitalisierung und Pflege," Heidelberg, 2019.
- [4] Kuske S, Roes M, Bartholomeyczik S, "Überleitung zwischen Häuslichkeit und Kurzzeitpflege," *Z Gerontol Geriatr*, Jul. 2016;49(5):429–436. doi: 10.1007/s00391-015-0907-y.
- [5] Shang E, "Überleitungsmanagement zwischen Anspruch und Wirklichkeit," *Krankenpflege-Journal*, vol. 43, no. 4–6, p. 131, 2005.
- [6] Mess EV et al., "Care Transition Records: A solution approach towards a digital solution." *Manuscript submitted for publication*.
- [7] Kristensen TS, Borg V, "Copenhagen Psychosocial Questionnaire (COPSOQ)," 2003.
- [8] Wien: Facultas AG, 2015.
- [9] Kopp J, *Sozialwissenschaftliche Datenanalyse: Eine Einführung*, vol. 2. Wiesbaden: Springer Fachmedien, 2014.