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\*Corresponding author: Mirela Slomic, Faculty of Health Sciences, Oslo and Akershus University College, Postboks 4 St. Olavs plass, Oslo, Norway  
E-mail: [mirela.slomic@hioa.no](mailto:mirela.slomic@hioa.no)

Reviewing editor:  
Udo Schumacher, University Medical Center Hamburg-Eppendorf, Germany

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## PHYSIOLOGY & REHABILITATION | RESEARCH ARTICLE

# Transitions of patients with traumatic brain injury and multiple trauma between specialized and municipal rehabilitation services—Professionals' perspectives

Mirela Slomic<sup>1\*</sup>, Helene L. Soberg<sup>1,2</sup>, Unni Sveen<sup>1,2</sup> and Bjørg Christiansen<sup>1</sup>

**Abstract:** Rehabilitation is a complex field requiring broad interprofessional and interorganizational collaboration. System-induced setbacks, such as rehospitalization and decreased quality of care, can occur when patients transition between services. The focus of this study is the rehabilitation of patients experiencing traumatic brain injury (TBI) and multiple trauma. The aim of the study was to explore rehabilitation professionals' perspectives on interprofessional collaboration and coordination during transitions of patients with TBI and multiple trauma between specialized and municipal rehabilitation services. The study used a qualitative design based on a grounded theory approach. Data were collected at two specialized rehabilitation units through observation of interprofessional meetings and 16 semi-structured individual interviews with participating professionals. Eight focus group discussions were also conducted with professionals at the municipal rehabilitation services. Data were recorded, transcribed verbatim and analyzed using a constant comparative method. Core aspects of rehabilitation practice in specialized and municipal rehabilitation services were identified, together with possible barriers and facilitators of patient transitions between services. The core aspects of rehabilitation practice within the specialized rehabilitation units were interprofessional teamwork, a time-limited perspective on the rehabilitation process and an individualized approach

### ABOUT THE AUTHORS

Mirela Slomic MD, MSc, Helene L. Soberg PhD, PT, Unni Sveen PhD, OT and Bjørg Christiansen PhD, RN work at Oslo and Akershus University College, Faculty of Health Sciences. Helene L. Soberg and Unni Sveen are also employed at Oslo University Hospital. The authors are participants in the research project "Transitions in rehabilitation: Biographical reconstruction, experiential knowledge and professional expertise". The project explores the processes of biographical changes and recovery experienced by people that have had a traumatic brain injury or multiple trauma, as well as the role of professional expertise in the rehabilitation process. Additionally, the project explores how different aspects of interprofessional and interorganizational cooperation can affect and support the rehabilitation process.

### PUBLIC INTEREST STATEMENT

Patients with traumatic brain injury and multiple trauma experience a number of health problems that negatively influence their everyday life. Rehabilitation after such injuries demands that different professionals and different health care organizations work together in order to provide the best services for the patient. Due to different approach to rehabilitation in the specialized and municipal rehabilitation, it is difficult to work together between the services. New policies focus on faster discharge from the hospitals, and could cause more difficulties for the rehabilitation process of patients with traumatic brain injury and multiple trauma. Working together can be improved by focusing on communication between the services, organizing mutual meetings or videoconferences.

based on specific needs, symptoms and signs. Within the municipal rehabilitation services, the core aspects of practice were multiprofessional teamwork, a long-term perspective on the rehabilitation process and a service-based approach to individual patients. Comprehensive and timely information transfers, joint meetings and video-conferences, and electronic patient records were considered transitional facilitators essential for seamless patient transitions between services.

**Subjects:** Health Communication; Rehabilitation Medicine; Disability; Sociology of Health and Illness

**Keywords:** interprofessional rehabilitation; patient transitions; service coordination; traumatic brain injury; multiple trauma; grounded theory

## 1. Introduction

Rehabilitation is a complex field that involves various health and welfare professionals and crosses both interprofessional and interorganizational boundaries (Körner, 2010; Strasser, Uomoto, & Smits, 2008; Wade & de Jong, 2000). Consequently, rehabilitation services require interprofessional and interorganizational collaboration and coordination in order to respond to the needs of complex patients (Körner, 2010; Strasser et al., 2008; Wade & de Jong, 2000). Interprofessional teamwork entails meeting regularly to discuss, collaboratively establish and follow-up patients' treatment plans and consequently develop a set of skills that overlap among different professions (Körner, 2010). Patient transitions following discharge or referral from one service or one professional to another represent a particularly vulnerable time for the patients (Hart, 2001). Patients can experience setbacks in their recovery process as a direct result of their contact with healthcare and social services. A setback could for example be that collaboration with an employer initiated in specialized rehabilitation aimed at facilitating return to work, was not followed up in primary health care. These system induced setbacks occur as a direct consequence of deficiencies in the system of services involved in the patients' care (Hart, 2001). Hesselink et al. (2012) report in their systematic review that suboptimal transitions from hospital to primary care can lead to various setbacks in patients' recovery process, including increased rehospitalizations and decreased quality of care.

In Norway, rehabilitation is organized into specialized services, i.e. secondary care, and municipal services, i.e. primary care. Although the Norwegian health care system is well organized within these two levels, the mediating structures between them are missing (Romøren, Torjesen, & Landmark, 2011). The present study aimed to explore rehabilitation professionals' experiences with the transition of patients with traumatic brain injury (TBI) and multiple trauma between specialized and municipal rehabilitation services.

## 2. Background

The increasing health expenditures, aging populations and the increasing number of people with chronic conditions in need of long-term care pose substantial challenges to health care systems. These challenges prompted the development of the Coordination reform, which emphasizes the need for coordinated services and aims to strengthen the municipalities' role in health care (Norwegian Ministry of Health & Care Services, 2009). However, challenges could arise as unintended consequences of new health care policies (Campbell, Reeves, Kontopantelis, Sibbald, & Roland, 2009; Monkerud & Tjerbo, 2016). The Coordination reform presents the backdrop for the current developments occurring within rehabilitation services in Norway. The use of the specialized rehabilitation services has decreased in the aftermath of the Coordination reform while, contrary to the Reform's goals, no general expansion was noted in the municipal rehabilitation services (Monkerud & Tjerbo, 2016).

Interprofessional healthcare when implemented in practice often meets challenges (Aiken & McColl, 2009). Similarly, interorganizational integration remains problematic when each part of the system is focused on internal tasks and resources, while the complete picture often could be overlooked (Lyngsø, Godtfredsen, & Frølich, 2016). Forster et al. (2004) reported that the transition period after hospital discharge is prone to adverse effects due to the discontinuity in providers and location of care and the inadequate communication between hospital and family physicians. These barriers are related to system induced setbacks that arise due to the existing system of services involved in the patients' treatment, and which undermine the recovery process (Hart, 2001).

Although a number of studies have focused on the transition between different services, they have mainly investigated either the transitions of geriatric patients or the transitions of adolescent patients from pediatric to adult health care services (Campbell et al., 2016; Clemente, Leon, Foster, Minden, & Carmona, 2016; Forster et al., 2004; Lindsay et al., 2016; Waring, Bishop, & Marshall, 2016). The transitions of adult patients with TBI or multiple trauma between different services have not been well characterized, and professionals' perspectives on these transitions remain underexplored. Additionally, we have not identified studies that have explored the relationship between interprofessional practice and transitions between different services for patients with traumatic brain injury and multiple trauma.

The focus of this study is the rehabilitation of patients with TBI and multiple trauma from the rehabilitation professionals' perspective. The disability caused by TBI and multiple trauma affects patients' everyday life and social and vocational participation (Andelic et al., 2009; Soberg, Roise, Bautz-Holter, & Finset, 2011). Furthermore, cognitive disability, which can affect self-awareness and limit user involvement, can also occur (Bach & David, 2006; Benedictus, Spikman, & van der Naalt, 2010). In this study, particular emphasis was placed on the impact of interprofessional teamwork on collaboration, coordination and support in the patients' rehabilitation process. In addition, professionals' perceptions of each other concerning both shared and specific professional knowledge, tasks and duties were explored. The focus was on the professionals' perspectives of their own roles, as well as those of other professional groups, in patient transitions between different rehabilitation service levels.

More specifically, we aimed to explore the following research question: How do rehabilitation professionals perceive and describe interprofessional collaboration in transition of patients with TBI and multiple trauma between specialized and municipal rehabilitation services?

### **3. Methods**

#### **3.1. Design**

This study used a qualitative design based on the grounded theory approach, which enabled the data to be simultaneously collected and analyzed, and emerging empirical questions to be addressed (Charmaz, 2014). The constructivist grounded theory approach also allowed for a broad contextual understanding while encouraging restraint in the use of theoretical preconceptions (Charmaz, 2014).

The study was part of a larger project entitled "Transitions in rehabilitation: Biographical reconstruction, experiential knowledge and professional expertise," which explored different aspects of the rehabilitation process of patients with TBI and multiple trauma. The project also included a user panel with representatives from relevant user organizations who had personal experience related to TBI or multiple trauma either themselves or as next of kin. They contributed valuable insight into the topics covered during the observations and the interviews and provided useful considerations during the data analysis and discussion of results.

### **3.2. Data collection**

Data were collected from April 2014 to March 2016 through three methods: observations of team meetings and individual interviews with professionals in the specialized rehabilitation units working with patients with TBI and multiple trauma and focus group interviews with rehabilitation professionals in the municipalities. Purposive sampling was applied in this study, which allowed for flexibility in the sampling strategies used throughout the research process (Charmaz, 2014; Öhman, 2005). Some of the observations and individual interviews were conducted prior to and informed the focus group interviews in the municipalities. Subsequent data collection was conducted interchangeably and simultaneously in the specialized and municipal rehabilitation services. Emerging categories and empirical questions raised at each stage of the data collection process informed the subsequent stage of data collection.

#### **3.2.1. Observations**

The observations of the eight interprofessional meetings focused on interactions, patterns of communication and decision-making. Observing the actual meetings offered several advantages including the opportunity to observe the context, routines and practices that the participants might take for granted (Patton, 2015). Notes were also taken during the observations, and these notes informed the interviews and were used during the data analysis process. In the eight observed meetings, 41 individual professionals participated, including three students (two in physiotherapy and one in psychology). In four of the eight observed meetings, patients participated as well. The number of professionals participating in the meetings varied from two to 14 professionals.

#### **3.2.2. Individual interviews**

Rehabilitation professionals who were either responsible for the patient in question or contributed extensively to the decision-making during the observed meetings were selected for individual interviews, as their contribution led to the introduction of new themes or development of existing categories during data analysis. The informants were health care professionals (one medical doctor, two physical therapists, three occupational therapists, two nurses and three psychologists) or other professionals involved in the rehabilitation process (two social workers, one speech therapist/special education professional). Two team coordinators who participated in the meetings were also included in the individual interviews. The individual interviews were conducted at the professionals' work place after the observed meetings. Due to the professionals' busy schedules, the interviews were limited, and ranged from 20 to 45 min. The semi-structured interview guide had seven discussion topics as well as suggested open-ended questions exploring the professionals' experiences, perspectives, motives and attitudes regarding rehabilitation practices (Brinkmann & Kvale, 2015; Öhman, 2005).

#### **3.2.3. Focus group interviews**

Vignette-based focus group interviews were conducted in eight municipalities in southeastern Norway. Both rural and urban municipalities were included in the study, with populations ranging from 5200 to 65,000 inhabitants. Professionals working as case workers at the Coordinating units of rehabilitation and professionals working in rehabilitation practice with TBI and multiple trauma patients (eight physiotherapists, eight occupational therapists, 11 nurses, two auxiliary nurses, two social workers, two social educators, one cultural educator) were included. Three to six informants participated in each of the eight focus groups, including a total of 34 individual professionals. The vignette described a typical patient with TBI and multiple trauma and was used as a standard opener for the discussion. The vignette-based focus groups allowed the municipal rehabilitation professionals to reach a common understanding regarding the rehabilitation practices and services in municipalities in general and to express common views regarding the collaboration within their particular municipality and with specialized rehabilitation services. Team characteristics were therefore highlighted and comparing results across municipalities was possible. Using a vignette has been shown to be a valid and comprehensive method for examining professional practice (Peabody, Luck, Glassman, Dresselhaus, & Lee, 2000), and it accentuates team characteristics when used in studies of professional teams (Eskelinen & Caswell, 2006). Focus group interviews were considered an

appropriate alternative to observations of team meetings discussing patients with TBI and multiple trauma. This was due to the municipal setting, where team meetings were relatively uncommon and there were few patients with TBI and multiple trauma.

The observed meetings, individual interviews and focus group discussions were audio-recorded and transcribed verbatim. Data collection was terminated when theoretical saturation was reached, with no new topics emerging during the observations or interviews.

### **3.3. Data analysis**

Data analysis was based on a grounded theory approach (Charmaz, 2014). A sense of the whole was gained by reading the first transcripts. The readings and discussions among the authors formed the basis for the initial codes identifying meaning units. Subsequently, the first author coded all transcripts using HyperResearch software tool (ResearchWare, Inc., Randolph, MA, USA). The codes were condensed, and the emerging categories were identified, discussed among the authors and confirmed in other transcripts using the grounded theory approach of constant comparison (Charmaz, 2014).

Analytic categories representing the core aspects of rehabilitation practice in specialized and municipal rehabilitation services were identified, leading to a common model of understanding how professionals perceived interprofessional work and patient transitions between specialized and municipal rehabilitation services and how they incorporated interprofessional collaboration and coordination during these transitions.

### **3.4. Ethical considerations**

The Regional Committee for Medical and Health Research Ethics assessed the study. In accordance with Norwegian legislation and the hospitals' internal regulations, the Privacy and Data Protection Officer was notified. The study application passed without any objections. Informed written consent was obtained from the professionals participating in the observed meetings and focus groups, as well as from the patients who either participated in the meetings or had their cases presented and discussed during the meetings. Audio files were stored on a secured research server and were only available to the researchers involved in the project.

## **4. Results**

### **4.1. Short-term individualized vs. long-term service-oriented perspectives on service provision**

Rehabilitation professionals at both service levels agreed on the need for long-term follow-up of patients with TBI and multiple trauma. However, a shorter length of stay (LOS) and faster transfers to the municipal rehabilitation services are required after the Coordination reform was introduced. This has had a noticeable influence on health care services demanding faster transitions also of patients with TBI and multiple trauma to the municipal rehabilitation services.

Specialist health services set up a five-week stay [exemplifying a limitation of having the maximum LOS determined prior to hospitalization] for rehabilitation. How can you be done in five weeks? How do you know that? Perhaps you need eight weeks, but then there is somebody else [waiting for a place], so I find it challenging. I find it strange that they can set a time limit without seeing how the patient responds to treatment. Section leader, focus group, municipal rehabilitation services

Patient transitions were affected by limited time for discharge planning, which was due to shorter LOS and faster transitions of patients with TBI and multiple trauma. Simultaneously the requirements regarding shorter LOS and faster patient transitions were not supported by measures enhancing patient transitions between services.

Consequently, the professionals recognized short LOS as a barrier to creating seamless patient transitions between services.

Now the inpatient time is much shorter. They are back home so fast that one gets no time to establish a dialogue [with specialized rehabilitation services] before they are back home in the municipality. Occupational therapist, focus group, municipal rehabilitation services

Importantly, rehabilitation professionals at both service levels agreed on this issue.

Addressing short-term time frames and planning treatments according to the limited inpatient time characterized the interprofessional teamwork at the specialized rehabilitation services. The time scheduled for meetings and for discussions on each individual patient was strictly limited. The patients' rehabilitation process was followed until discharge, with limited possibilities and strict criteria for readmission. Yet, the focus of the specialized rehabilitation professionals was individualized and based on the specific symptoms, needs and goals of patients with TBI and multiple trauma. Although part of the focus was on symptoms, this approach was not a typical biomedical approach. Rather, the services were strongly oriented towards the patient as an individual, focusing on the patient's unique aspects.

The municipal rehabilitation professionals viewed the rehabilitation process in longer terms, emphasizing the importance of long-term, often life-long rehabilitation of patients with TBI and multiple trauma. However, they approached the patients having in mind the availability of the rehabilitation services in their respective municipalities.

We assess the patients and make them an offer according to what is available. We do not have short-term rehabilitation beds, but we have home rehabilitation. Physiotherapist, focus group, municipal rehabilitation services

Therefore, the focus in municipal rehabilitation was on home care, physical and occupational rehabilitation, and the municipal level professionals experienced disadvantages due to the limited services available to patients with TBI and multiple trauma in the municipalities.

After the Coordination reform came into play and penalty fees started [penalty fees were introduced for not immediately receiving patients who were ready for discharge from somatic hospitals and in need of rehabilitation or long-term care], when one had to accept patients, it was difficult to distinguish between rehabilitation patients and short-term patients, so the whole ward was mixed with short-term patients, dementia patients—one and the other within rehabilitation. Occupational therapist, focus group, municipal rehabilitation services

As the municipal rehabilitation professionals did not have access to an extensive range of rehabilitation services, they attempted to compensate by supplementing the rehabilitation process of patients with TBI and multiple trauma with any type of service that might be available in their respective municipality. This practice was reinforced in the aftermath of the Coordination reform and introduction of the penalty fees for not receiving patients ready for discharge, as the municipalities attempted to avoid the fees.

Rehabilitation professionals from both the specialized and municipal services acknowledged the lack of resources in municipalities as a major barrier to municipal rehabilitation services and patient transitions. This was viewed in light of the additional responsibilities transferred to municipalities, while the accompanying resources did not follow. In addition to a lack of inpatient facilities, the existing inpatient beds in municipalities were primarily intended for geriatric patients and were not well suited for patients with TBI and multiple trauma.

#### **4.2. Interprofessional vs. multiprofessional teamwork**

While the specialized rehabilitation services used well organized interprofessional teamwork and interprofessional knowledge, practice in the municipal rehabilitation services remained mainly multiprofessional. The professionals at both service levels considered interprofessional work to be advantageous and an excellent way of approaching patients with TBI and multiple trauma holistically, improving continuity of care, avoiding fragmented services and working time-efficiently. However, they acknowledged that this type of work was largely missing during patient transitions between services.

Following the changes from 2012 onwards [when the implementation of the Coordination reform started], what kind of expertise should we have? Because we work alone in the patient's home with an individual who a day ago was surrounded by seven different people [professionals at specialized rehabilitation units]. Section leader, focus group, municipal rehabilitation services

The rehabilitation professionals in the municipalities expressed concerns regarding responsibilities and expectations related to the Coordination reform. A lack of expertise needed for meeting the complex needs of patients with TBI and multiple trauma was acknowledged. Both outpatient follow-up at specialized rehabilitation services and availability of inpatient facilities in municipalities were considered to have a positive effect on patient transitions between services. The professionals stated that these two factors served as excellent opportunities to facilitate patient transitions between the services.

We [a rehabilitation team at a specialized rehabilitation unit] have an outpatient clinic that could be used much more both before the patient arrives and before the first patient interview, but many more could also have the opportunity for follow-up after discharge. I think that this is an important issue. Nurse, individual interview, specialized rehabilitation services

Professionals in the specialized rehabilitation services, in the context of collaboration within the interprofessional team, moved towards an understanding of the interprofessional team as 'us'—i.e. as a unit of professionals connected by common goals and shared knowledge.

Therefore, we try to get all the groups or all the professionals who know the patient to come up with their own assessment so that we agree. Medical doctor, individual interview, specialized rehabilitation services

However, it was difficult to translate this interprofessional knowledge about patients with TBI and multiple trauma to the context of the municipal rehabilitation services. The professionals in the municipalities worked in parallel, each professional individually, rather than together. In other words, their teamwork with patients with TBI and multiple trauma was multiprofessional. Occasional or regular meetings could be organized to coordinate professional activities around common patients. In those cases, working with the patient remained the responsibility of the respective individual professionals alone.

#### **4.3. A lack of knowledge exchange and feedback during patient transitions**

Rehabilitation professionals at both levels considered their different knowledge bases, related to interprofessional and multiprofessional approach to teamwork, a potential barrier to establishing seamless patient transitions between specialist and municipal rehabilitation services.

My experience in this area [municipal rehabilitation and patients with TBI] is that there is little expertise and great uncertainty. Therefore, it is not easy. They have invisible symptoms, even physical ones. So, patients often fall between two stools, where it is not easy to get help unless there are concrete complaints, like from the neck, shoulder, back or something. Physiotherapist, individual interview, specialized rehabilitation services

Knowledge in this context included both profession-specific knowledge and knowledge regarding the available services and routines for patients with TBI and multiple trauma at both service levels. More specifically, it comprised not only knowledge of a particular patient or clinical procedure but also the different experiences and knowledge the professionals had about the available services and how those services were organized.

The hospital does not have a full overview of the available services in different municipalities, because, of course, it has more than one municipality to consider, so it is somewhat a puzzle. Therefore, one [i.e. specialized rehabilitation professionals] should not promise something on behalf of others, as this could create expectations that cannot be met. Coordinating unit leader, focus group, municipal rehabilitation services

The municipal-level professionals in particular experienced follow-up of some of the recommendations from the specialized rehabilitation services to be challenging. They considered these recommendations to be made with a lack of consideration for and insight into the available services in the municipalities.

The rehabilitation professionals working in specialized rehabilitation units considered a lack of feedback from the municipal rehabilitation services during discharge planning a barrier, as this limited their understanding of the possibilities and limitations of the rehabilitation services in different municipalities for patients with TBI and multiple trauma. Receiving feedback was considered an issue in cases where the services in municipalities were application-based. Unless the applications had been processed, neither the rehabilitation professional in the specialized rehabilitation unit nor the patient could receive feedback on the status of the applications.

Nurse: Is the patient getting a speech therapist follow-up?

Special educator: I applied for it.

Nurse: Yes, you have not heard anything?

Special educator: No. I applied, but the application has to go through all the systems.

Observation, team meeting, specialized rehabilitation services

Professionals at both levels of rehabilitation services experienced difficulties finding optimal methods for information transfer between services, both with respect to the quantity and quality of information.

We do not always get much profession-specific information from the hospitals.

Physiotherapist, focus group, municipal rehabilitation services

Tools for collaboration and coordination such as rehabilitation plans and individual plans were primarily applied within one of the two respective levels of rehabilitation services. Rehabilitation plans were used in the specialized rehabilitation units and included information about the patients' goals, the professionals responsible for supporting the patient in achieving the goals, and the planned time frames. The individual plans used in the municipal rehabilitation services also included information about the patients' goals, the professionals involved in the rehabilitation process and the coordinator for all of the available services. Although much of the information in these two types of plans seemed to overlap, the plans were not mentioned as potentially useful for collaborating and coordinating across services. Additionally, even though the patients' right to receive an individual plan was granted by law if coordinated and long-term care is needed, individual plans were rarely used and therefore had a limited impact even on municipal-level rehabilitation services.

#### **4.4. Reduced direct contact between the specialized and municipal rehabilitation services**

The changes in contact between professionals brought by the introduction of the policy changes following the Coordination reform were negatively perceived. The professionals in the municipalities



stated that a high threshold for contacting specialized rehabilitation services in their daily practice provided an additional barrier. They mentioned difficulties in contacting the appropriate specialized rehabilitation professional and acknowledged the process as time-consuming.

I find it harder to call and get a hold of people—in addition, then, to get a hold of the right person. Of course, it also happens that they do not call you back. However, it also often goes well, it is just that it is worse now than before. Physiotherapist, focus group, municipal rehabilitation services

According to the professionals in the municipalities, issues with contacting colleagues in the specialized rehabilitation services were also related to the busy work schedules in the specialized rehabilitation services and the patients' short LOS.

There was a lack of common meeting points and the increased use of electronic communication across the service levels. Professionals in the municipalities stated that direct communication with specialized rehabilitation professionals became less frequent after electronic communication became available, as they increasingly used electronic communication. The professionals had limited opportunities for direct contact through conversations and meeting points, not only across services, but also within municipal services.

A physiotherapist worked there [at a specialized hospital] who I could just call and consult with when I was unsure. Then, she might come here and work with me on a treatment. I really got a lot out of it. However, this [collaboration] is now gone. Physiotherapist, focus group, municipal rehabilitation services

Additionally, obtaining learning opportunities across the respective rehabilitation service levels was limited. The reduced direct contact between the services hampered contextualizing the information about patients with TBI and multiple trauma. Consequently, the professionals experienced difficulties in planning patient transitions and follow-up in the municipalities. The professionals perceived that the developments following the Coordination reform led to fewer arenas for exchanging knowledge and expertise across the services.

In municipal rehabilitation services in particular, the professionals valued receiving extensive and profession-specific information. Joint meetings and video conferences, when available, provided opportunities for discussion, direct knowledge exchange and information transfer, and clarification of potential uncertainties. Knowledge transfer and understanding different perspectives through inter-professional collaboration was recognized across the services and included both in-person meetings and videoconferences.

It is much easier to meet [in a video conference] than for people to come here or for us to go there. A bit unfamiliar at first, but I think it works well. Maybe we could do it more. Now, we have maybe one meeting per patient per hospitalization, but we could have more, also after discharge, more outpatient video conferences. Nurse, individual interview, specialized rehabilitation services

Common meeting points were considered of utmost importance for facilitating collaboration at both service levels and enhancing transitions of patients with traumatic brain injury and multiple trauma between the services. Moreover, rehabilitation professionals at the municipal level acknowledged that there was a need for joint meeting points within municipal services as well.

#### **4.5. Missing links in patient transitions between rehabilitation services**

The differences in the core aspects of rehabilitation identified in the study were different approaches to teamwork, different time perspectives on the timing of service provision and focus of services in the specialized and municipal rehabilitation services. These different approaches and perspectives represented the missing links in transitions of patients with TBI and multiple trauma between services (Table 1).

**Table 1. Core aspect and missing links of the rehabilitation practice and their relation to barriers and facilitators of patient transitions**

Core aspects of rehabilitation practice		Missing links in patient transitions between services	Barriers for patient transitions between services	Facilitators of patient transitions between services
Specialized rehabilitation services	Municipal rehabilitation services			
Interprofessional teamwork	Multiprofessional teamwork	Missing link of interprofessionalism	Different knowledge bases	Comprehensive and timely information transfer
			Lack of feedback from municipalities	Common meeting points and videoconferencing
			Lack of coordination tools between services	Electronic patient records
Short-term perspective on the rehabilitation process	Long-term perspective on the rehabilitation process	Missing link of time perspective in provision of services	Short LOS	Outpatient follow-up in the specialized rehabilitation services and inpatient facilities in the municipal rehabilitation services
			High threshold for contact in the specialized rehabilitation services	
			Lack of direct knowledge transfer	
Individualized focus based on individual patients' symptoms, needs and goals	Service-oriented focus based on the services available in the municipalities	Missing link of focus for services	Lack of resources in the municipalities	
			Lack of specialized expertise in the municipalities	
			Lack of inpatient facilities	

These missing links were related to the barriers that the professionals described, but at the same time, the rehabilitation professionals identified and proposed potential facilitators of patient transitions between different levels of rehabilitation services (Table 1). These facilitators were perceived necessary in order to establishing successful transitions of patients with TBI and multiple trauma between the rehabilitation services.

### 5. Discussion

Our findings showed that transitions of patients with TBI and multiple trauma between the rehabilitation services were exposed to barriers related to the different core aspects under which specialized and municipal rehabilitation services were organized and provided. The current development of the rehabilitation services was acknowledged to be influenced by organizational, professional and personal factors. These differential influences of location and contextual factors should be acknowledged (Bourgeault, Hirschhorn, & Sainsaulieu, 2011).

The underlying idea of the Coordination reform with emphasis on collaboration across service levels, seamless patient transitions and decentralization was comprehensive (Norwegian Ministry of Health & Care Services, 2009). However, the practical implementation proved to be more challenging, and in the worst-case scenario, the policy changes might lead to poorer rehabilitation services and setbacks for patients with TBI and multiple trauma. For example, Campbell et al. (2009) reported on reduced continuity of care after policy changes and introduction of a pay-for-performance scheme. Others have identified unintended consequences of health policies that could contribute to avoidable poor outcomes or underprioritizing of vulnerable patient groups (Foreman, 2016; Naylor et al., 2012). Our findings showed that the Coordination reform induced shorter LOS implying a limited time for planning patients' discharge and a short time for preparing follow-up at the municipal service level. Additionally, the high threshold of contacting specialized rehabilitation services made it difficult for the municipal rehabilitation services to compensate for the issues caused by shorter LOS. The findings of Coleman and Berenson (2004) support the importance of planning patient transitions and address these transitions as often unplanned and followed by unanticipated medical problems. The current development in rehabilitation services presented in our findings, with shorter LOS, more responsibilities placed on the municipalities without increasing available resources and

expertise, could lead to a widening rather than a bridging of the gap between services. Similarly, shorter LOS and faster discharge for patients with TBI and multiple trauma could put a pressure on both levels of the rehabilitation services, cause difficulties in already established interprofessional teamwork and thus, induce setbacks in the patients' rehabilitation process.

The available resources in the municipalities were additionally strained as more responsibilities were transferred to the municipalities in the aftermath of the Coordination reform. Although the rehabilitation professionals were aware of the patients' overall situation in the municipalities, due to a lack of resources and budget restrictions, it was not always possible for them to provide optimal services in the municipalities. The lack of human resources included not only available positions in the municipality, but also the limited expertise and lack of training of current professionals in managing complex needs of patients with TBI and multiple trauma. Lyngsø et al. (2016) reported similar findings regarding differences in specialized expertise between hospitals and primary care professionals. Nevertheless, the findings in the present study showed that professionals in the municipal rehabilitation services tried to compensate for the lack of resources by providing the services available in the municipalities. However, the provided services were not necessarily optimal for patients with TBI and multiple trauma.

The interprofessional approach to teamwork in the specialized rehabilitation services and multi-professional teamwork in the municipalities accentuated different knowledge and expertise areas. Due to these two different approaches to teamwork, additional efforts were needed to transfer interprofessional knowledge to the multiprofessional context of the municipalities during patient transitions between services. In this study, we considered the term 'knowledge' broadly, encompassing profession-specific professional knowledge as well as knowledge of the available services and routines across service levels. Previous studies report that many health care professionals never worked in another setting and were unfamiliar with the available services and routines in different settings (Coleman & Berenson, 2004). Although interprofessional teamwork has been shown to be more effective than multiprofessional (Körner, 2010), not all types of interprofessional teamwork are appropriate in every setting (Aiken & McColl, 2009). However, our findings point to a need for closer collaboration among the rehabilitation professionals within the municipal rehabilitation services when addressing the needs of patients with TBI and multiple trauma. Additionally, establishing common meeting points between the services seems essential in creating seamless patient transitions.

A lack of feedback and of coordination tools between services made transitions of the patients with TBI and multiple trauma challenging. The risks of encountering setbacks could be particularly high during patient transitions, as some patients might be discharged from specialized rehabilitation without being provided continued rehabilitation services in the municipalities due to limitations in discharge planning (Coleman & Berenson, 2004). Patients with TBI and multiple trauma were considered a particularly vulnerable group due to their complex needs and lack of established coordination tools during transitions. However, when available, common meetings and videoconferences were arena for establishing closer coordination during patient transitions between the services.

Our findings pointed towards an equivocal role of the electronic patient record (EPR) in patient transitions between services. Although EPR were recognized as a useful tool that could enable seamless patient transitions between specialized and municipal rehabilitation services, it was also acknowledged to be a barrier. The perception of EPRs as a barrier to patient transitions might be related to the lack of personal contact and opportunities for direct knowledge exchange. An emphasis on the importance of complementarity between technological and social aspects of information exchange has been reported previously (Dobrzykowski & Tarafdar, 2015). Similarly, Hellesø and Lorensen (2005) argue that technology does not answer what is relevant and appropriate information in the case of a specific patient in a specific clinical situation. However, similar to our findings regarding the need for timely and comprehensive information transfer presented, Dobrzykowski and Tarafdar (2015) emphasized the importance of timely, accurate and reliable information exchange.

### 5.1. Discussion of limitations

A possible limitation of the current study could be that the data were collected in only two specialized rehabilitation units. However, they were considered representative of specialized rehabilitation units in general and comprised one inpatient and one outpatient rehabilitation unit. Similarly, including only eight municipalities might be considered a limitation. On the other hand, we attempted to include a variety of municipalities with different characteristics regarding location, population and organization of rehabilitation services.

#### Concluding comments

As previously reported, patient transitions between specialized and municipal services remains challenging. In this article, the core aspects of practice that influenced the transitions between services of patients with TBI and multiple trauma were identified. The differences in the core aspects of practice across the services represented the missing links in patient transitions, and these differences were related to barriers in the transition process. The impact of the Coordination reform was uncertain for patients with TBI and multiple trauma, as the professionals recognized the possibility of system-induced setbacks due to the focus on a faster transition from specialized to municipal rehabilitation services.

The rehabilitation professionals in this study proposed possible facilitators that could compensate for the existing barriers in patient transitions. The differences in core aspects at different levels of service emphasize the need to create common meeting points and areas for knowledge exchange across services. The professionals should become more familiar with the practices and possibilities of the respective level of services with which they cooperate in order to provide seamless transitions of patients between services. Information exchange seems to be essential. However, there is a need for both technological solutions and opportunities for direct personal contact between professionals.

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#### Competing Interests

The authors declare no competing interest.

#### Author details

Mirela Slomic<sup>1</sup>  
E-mail: [mirela.slomic@hioa.no](mailto:mirela.slomic@hioa.no)  
ORCID ID: <http://orcid.org/0000-0001-5054-3925>  
Helene L. Soberg<sup>1,2</sup>  
E-mail: [h.l.soberg@medisin.uio.no](mailto:h.l.soberg@medisin.uio.no)  
ORCID ID: <http://orcid.org/0000-0001-6908-7480>  
Unni Sveen<sup>1,2</sup>  
E-mail: [unni.sveen@hioa.no](mailto:unni.sveen@hioa.no)  
ORCID ID: <http://orcid.org/0000-0001-8720-760X>  
Bjørge Christiansen<sup>1</sup>  
E-mail: [bjorge.christiansen@hioa.no](mailto:bjorge.christiansen@hioa.no)

<sup>1</sup> Faculty of Health Sciences, Oslo and Akershus University College, Postboks 4 St. Olavs plass, Oslo, Norway.

<sup>2</sup> Department of Physical Medicine and Rehabilitation, Oslo University Hospital, Oslo, Norway.

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#### References

- Aiken, A. B., & McColl, M. A. (2009). Interprofessional healthcare: A common taxonomy to assist with understanding. *Journal of Allied Health*, 38, e92–e96.
- Andelic, N., Hammergren, N., Bautz-Holter, E., Sveen, U., Brunborg, C., & Røe, C. (2009). Functional outcome and health-related quality of life 10 years after moderate-to-severe traumatic brain injury. *Acta Neurologica Scandinavica*, 120, 16–23.  
<https://doi.org/10.1111/ane.2009.120.issue-1>
- Bach, L. J., & David, A. S. (2006). Self-awareness after acquired and traumatic brain injury. *Neuropsychological Rehabilitation*, 16, 397–414.  
doi:10.1080/09602010500412830
- Benedictus, M. R., Spikman, J. M., & van der Naalt, J. (2010). Cognitive and behavioral impairment in traumatic brain injury related to outcome and return to work. *Archives of Physical Medicine and Rehabilitation*, 91, 1436–1441.  
doi:10.1016/j.apmr.2010.06.019
- Bourgeault, I. L., Hirschhorn, K., & Sainsaulieu, I. (2011). Relations between professions and organizations: More fully considering the role of the client. *Professions & Professionalism*, 1, 67–86. doi:10.7577/pp.v1i1.150
- Brinkmann, S., & Kvale, S. (2015). *InterViews: Learning the craft of qualitative research interviewing*. Thousand Oaks: SAGE Publications.
- Campbell, F., Biggs, K., Aldiss, S. K., O’Neill, P. M., Cloves, M., McDonagh, J., ... Gibson, F. (2016). Transition of care for adolescents from paediatric services to adult health services (Review). *Cochrane Database Systematic Reviews*, 29. doi:10.1002/14651858.CD009794.pub2
- Campbell, S. M., Reeves, D., Kontopantelis, E., Sibbald, B., & Roland, M. (2009). Effects of pay for performance on the quality of primary care in England. *New England Journal of Medicine*, 361, 368–378. doi:10.1056/NEJMs0807651
- Charmaz, K. (2014). *Constructing grounded theory* (2nd ed.). Thousand Oaks: Sage Publications.
- Clemente, D., Leon, L., Foster, H., Minden, K., & Carmona, L. (2016). Systematic review and critical appraisal of transitional care programmes in rheumatology. *Seminars in Arthritis and Rheumatism*, 46, 372–379. doi:10.1016/j.semarthrit.2016.06.003
- Coleman, E. A., & Berenson, R. A. (2004). Lost in transition: Challenges and opportunities for improving the quality of transitional care. *Annals of Internal Medicine*, 140, 533–536. <https://doi.org/10.7326/0003-4819-141-7-200410050-00009>
- Dobrzykowski, D. D., & Tarafdar, M. (2015). Understanding information exchange in health care operations: Evidence from hospitals and patients. *Journal of Operations Management*, 36, 201–214. doi:10.1016/j.jom.2014.12.003

- Eskelinen, L., & Caswell, D. (2006). Comparison of social work practice in teams using a video vignette technique in a multi-method design. *Qualitative Social Work*, 5, 489–503. doi:10.1177/1473325006070291
- Foreman, D. M. (2016). Exploring unintended consequences of policy initiatives in mental health: The example of child and adolescent mental health services (CAMHS) in England. *BMJ Open*, 6, e010714. doi:10.1136/bmjopen-2015-010714
- Forster, A. J., Clark, H. D., Menard, A., Dupuis, N., Chernish, R., Chandok, N., ... van Walraven, C. (2004). Adverse events among medical patients after discharge from hospital. *Canadian Medical Association Journal*, 170, 345–349.
- Hart, E. (2001). System induced setbacks in stroke recovery. *Sociology of Health and Illness*, 23, 101–123. doi:10.1111/1467-9566.00243
- Hellesø, R., & Lorensen, M. (2005). Inter-organizational continuity of care and the electronic patient record: A concept development. *International Journal of Nursing Studies*, 42, 807–822. doi:10.1016/j.ijnurstu.2004.07.005
- Hesselink, G., Schoonhoven, L., Barach, P., Spijker, A., Gademan, P., Kalkman, C., ... Wollersheim, H. (2012). Improving patient handovers from hospital to primary care: A systematic review. *Annals of Internal Medicine*, 157, 417–428. doi:10.7326/0003-4819-157-6-201209180-00006
- Körner, M. (2010). Interprofessional teamwork in medical rehabilitation: A comparison of multidisciplinary and interdisciplinary team approach. *Clinical Rehabilitation*, 24, 745–755. doi:10.1177/0269215510367538
- Lindsay, S., Proulx, M., Maxwell, J., Hamdani, Y., Bayley, M., & Colantonio, A. (2016). Gender and transition from pediatric to adult health care among youth with acquired brain injury: Experiences in a transition model. *Archives of Physical Medicine and Rehabilitation*, 97(Suppl. 2), S33–S39. doi:10.1016/j.apmr.2014.04.032
- Lyngsø, A. M., Godtfredsen, N. S., & Frølich, A. (2016). Interorganisational integration: Healthcare professionals' perspectives on barriers and facilitators within the Danish healthcare system. *International Journal of Integrated Care*, 16, 1–10. doi:10.5334/ijic.2449
- Monkerud, L. C., & Tjerbo, T. (2016). The effects of the Norwegian coordination reform on the use of rehabilitation services: Panel data analyses of service use, 2010 to 2013. *BMC Health Services Research*, 16, 353. doi:10.1186/s12913-016-1564-6
- Naylor, M. D., Kurtzman, E. T., Grabowski, D. C., Harrington, C., McClellan, M., & Reinhard, S. C. (2012). Unintended consequences of steps to cut readmissions and reform payment may threaten care of vulnerable older adults. *Health Affairs*, 31, 1623–1632. doi:10.1377/hlthaff.2012.0110
- Norwegian Ministry of Health and Care Services. (2009) *Summary in English: Report No. 47 (2008–2009) to the starting. The coordination reform: Proper treatment—at the right place and right time.* Oslo: Author.
- Öhman, A. (2005). Qualitative methodology for rehabilitation research. *Journal of Rehabilitation medicine*, 37, 273–280. doi:10.1080/16501970510040056
- Patton, M. Q. (2015). *qualitative research & evaluation methods* (4th ed.). Thousand Oaks: Sage Publications.
- Peabody, J. W., Luck, J., Glassman, P., Dresselhaus, T. R., & Lee, M. (2000). Comparison of vignettes, standardized patients, and chart abstraction: A prospective validation study of 3 methods for measuring quality. *JAMA*, 283, 1715–1722. https://doi.org/10.1001/jama.283.13.1715
- Romøren, T. I., Torjesen, D. O., & Landmark, B. (2011). Promoting coordination in Norwegian health care. *International Journal of Integrated Care*, 11, e127.
- Soberg, H. L., Roise, O., Bautz-Holter, E., & Finset, A. (2011). Returning to work after severe multiple injuries: multidimensional functioning and the trajectory from injury to work at 5 years. *Journal of Trauma and Acute Care Surgery*, 71, 425–434. doi:10.1097/TA.0b013e3181eff54f
- Strasser, D. C., Uomoto, J. M., & Smits, S. J. (2008). The interdisciplinary team and polytrauma rehabilitation: prescription for partnership. *Archives of Physical Medicine and Rehabilitation*, 89, 179–181. doi:10.1016/j.apmr.2007.06.774
- Wade, D. T., & de Jong, B. A. (2000). Recent advances in rehabilitation. *British Medical Journal*, 320, 1385–1388. doi:10.1136/bmj.320.7246.1385
- Waring, J., Bishop, S., & Marshall, F. (2016). A qualitative study of professional and carer perceptions of the threats to safe hospital discharge for stroke and hip fracture patients in the English National Health Service. *BMC Health Services Research*, 16, 297. doi:10.1186/s12913-016-1568-2



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