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The Process of Transitioning Across Levels of Care Among Severely Injured Workers

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ABSTRACT

The purpose of this qualitative descriptive study was to explore the experiences of severely injured workers and their families from the time of injury to the time of discharge from a trauma center. Ten severely injured workers were interviewed using a semi-structured interview format. Grounded theory methods were then utilized to identify patterns and themes within the interviews. The analysis and interpretation of the participants' description of their experience during their hospitalization for occupationally-related trauma resulted in identification of a core variable, Game Plan, along with some major themes such as: "who's on first?", "where are you?" and "rush job". Study findings support the importance of creating case management interventions targeted at ensuring that identified patient needs and information are transferred across levels of patient care.

Keywords: Severely Injured Workers, occupational injuries, information transfer, case management

The Process of Transitioning Across Levels of Care Among Severely Injured Workers

Occupational injuries in the United States exact extraordinary costs, not only in economic terms, but also in terms of human suffering. The Bureau of Labor

Statistics (BLS), an arm of the US. Department of Labor, has determined that in the United States there are approximately 5,700 fatal work related injuries reported on an annual basis.¹ It has been estimated that every day over 9,000 individuals sustain an injury while working, with about 16 of these injuries resulting in death.² The Liberty Mutual Insurance Company estimated that occupational injuries and illnesses in United States cost \$48.3 billion annually.³

Traumatic injuries in the work place are attributable to such factors as violence, falls, industrial and agricultural machinery mishaps, electrical shock and motor vehicle crashes during work-related driving. According to a report by the NORA Trauma Injury Team), “the overall human, social and financial toll of traumatic occupational injury is enormous, rivaling the burden imposed by such health threats as cancer and cardiovascular disease” and it is for this reason that traumatic injuries have been delineated as a research priority.^{4p2}

Although there is a great deal of research on occupational injuries, more data are needed that specifically describes the process of transitioning across levels of care for those who experience a severe work related injury. In 2007, Kripalani and colleagues performed a systematic literature review to determine the extent to which physicians and other members of the health care team successfully transfer accurate and timely patient information to primary care physicians. Further these researchers sought to describe the impact of information discontinuity on patient outcomes. Data were extracted from 55 observational studies and 18 studies that evaluated the efficacy of interventions to improve information transfer. This review found “deficits in communication and information transfer [between hospital-based physicians and primary care physicians] are common and may adversely affect patient care”.^{5p831}

Williams and his colleagues⁶ conducted semi-structured focus group sessions with surgical residents, general surgery attending physicians, and surgical nurses at five medical centers to ascertain the type of surgical information transfer and communication (ITC) errors that produced adverse events and near misses. Blurred boundaries of responsibility (87 reports), decreased surgeon familiarity with patients (127 reports), diversion of surgeon attention (31 reports), and distorted or inhibited communication (67 reports) led to delays in patient care (77% of the cases), wasted surgeon/staff time (48% of the cases), and serious adverse patient outcomes (31% of the time). Both the Kripalani and Williams studies suggest that transfer of information across levels of care warrants additional research and intervention.^{5.6}

Interestingly, there has been scant exploration of transfer of information across levels of care from a patient and family perspective, particularly among those patients who are cared for at a trauma center. The purpose of the present study was to explore the experiences of severely injured workers from the time of injury to the time of discharge, with a focus on the identification of patient needs across all levels of care via a case management perspective. Case management has

been defined as those interventions implemented by a clinical nurse that work to coordinate extensive hospital resources and ideally results in linkages that produce nonfragmented quality care, teamwork, improved financial performance, streamlined resource use, and prevention of duplication.⁷

Although intense effort and considerable resources are expended when severely injured patients are admitted to a hospital, less coordinated care often emerges as patients progress through their hospitalization and are stable enough for discharge. More specifically, many case management systems commence care at either the time the injured worker is discharged to home or to a rehabilitation facility, or when their employer initiates care supports following discharge.^{8,9} Dutton and his team¹⁰ found that due to the complexity of the trauma patient, daily multidisciplinary rounds were effective in shortening length of stay and improving the efficiency of in-patient care. However, the impact of such multidisciplinary rounds and their effect on improving information transfer following discharge remains largely unknown.

Recent research indicates that the loss of information as the patient moves across levels of care can be improved by using computer-based tools and techniques that facilitate and routinize information capture and transfer.⁵ The development of such tools for the severely injured trauma patient will be enhanced by this research, since without a coordinated case management approach that utilizes the input from patients and significant others, as well as the talents of all members of the health care team, it is possible to overlook pertinent co-morbid conditions, subtle injuries, psychological factors, and patient or family needs that can greatly influence patient outcomes. Since trauma care is interdisciplinary, these problems may be addressed in a variety of ways, and if the information about them is not transferred to team members, or across levels of care, it is lost.

Significance

Although there is a great deal of research on the topic of occupational injuries, minimal data exist that specifically describes patients' and families' perspectives regarding the process of transitioning across levels of care for those who experience a severe work related injury. The purpose of this study was to explore the experiences of severely injured workers and their families from the time of injury to the time of discharge from a trauma center; the ultimate aim was to lay a foundation for case management interventions targeted at ensuring that identified patient needs and information about interventions to address them were transferred across levels of patient care.

Setting and Participants

This study was conducted at an urban trauma center in the mid-Atlantic region of the United States. Prior to commencing data collection, the research team

obtained permission from the institutional review board at the trauma center. A purposive sample of 10 workers who were 18 years of age and older, were admitted to a regional trauma center due to a work related injury, and had an index of severity score (ISS) greater than 15 were interviewed for this study. The ISS is an anatomical score used to assess patients with multiple injuries and estimate the probability of survival. For the purposes of this study, severe occupational injury was operationally defined as an ISS of > than 15, indicating that the patient had a >15% chance of succumbing to his or her injuries.

Eligible patients and their significant others (hereinafter participants) were identified via the admissions computer data base at the trauma center and both were permitted to participate in the interviews. Study participants were able to read and understand English, and were cognitively capable of answering interview questions. Following a complete explanation of the purpose and process of the study, participants completed an "Evaluation to Sign Consent" test to assess their competency to consent. All of those who participated in the research correctly answered all of the items on the test and a copy of the test was placed in the patient's medical record. Data collection took place in the patient's hospital room and in one instance via a telephone interview.

Patients were assessed in terms of their co-morbidities and anticipated discharge needs. More specifically, the investigators asked patients and their families about their past medical history, the events that led to their hospitalization at the trauma center, gaps in the care they had received, positive supports during their hospitalization, and current medical and health care needs.

Grounded Theory Overview

Grounded theory methods were used to guide this project. Grounded theory, based upon symbolic interactionism, is used to "develop an inductively grounded theory about a phenomenon. The research findings constitute a theoretical formulation of the reality under investigation...[whereby] the concepts and relationships are not only generated but provisionally tested".^{11p25} Derived from a sociological perspective, grounded theory afforded an open exploration of participants' perceptions¹² in order to better understand their experiences during hospitalization for occupational-related trauma. Data were collected and analyzed using constant comparison such that each interview emerged from and built upon findings from previous interviews.

Three basic coding procedures determine both sampling and analysis in grounded theory. Open coding is a term that means examining the data for important categories that were named as they emerged. Axial coding was then used to explore interrelationships between the categories. Categories were compared to each other and new data used to discover or confirm links and define the type of relationships.¹³ Finally, the data were further analyzed to create a design that portrayed the interrelationship between axial coding categories

using selective coding. The final abstraction is presented through the development of a visual model and a descriptive narrative about the central phenomenon of the study.^{14,15}

Instrumentation

Patients were asked to provide demographic data and identify anticipated discharge needs during a 30-45 minute interview. An “Interview Guide” served as the initial starting point for the interview. Additional probes/questions were asked based on the patient’s and family’s responses and the responses of other patients.

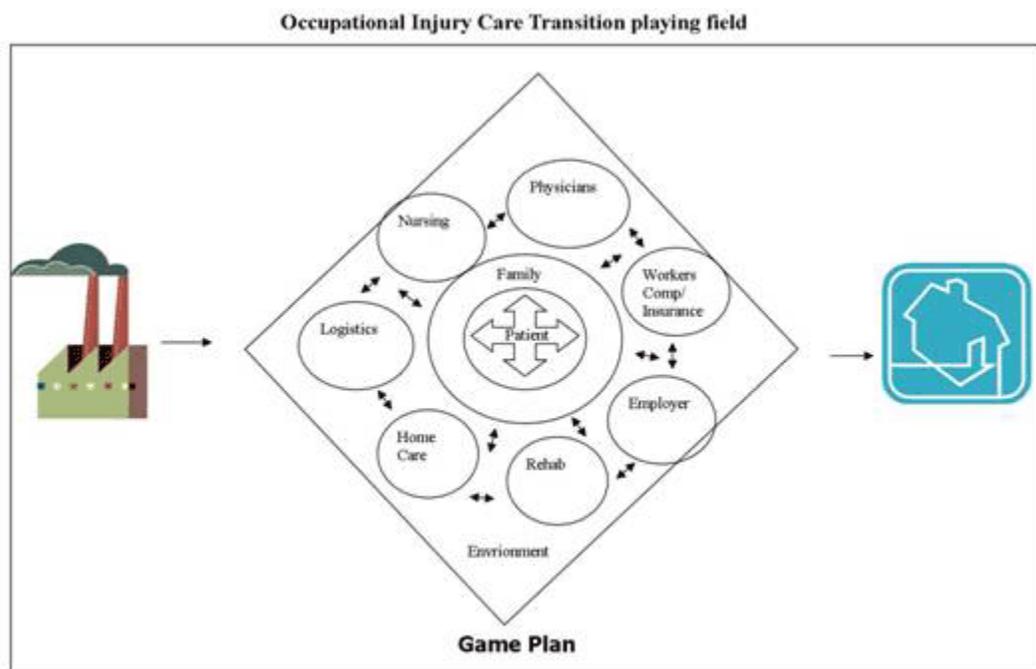
Three members of the research team conducted the audiotaped interviews of participants. Following the interview, the same investigator reviewed the audiotape and identified emerging themes. The credibility of the themes was further assessed by having a second investigator listen to the audiotape and confirm identified themes. Finally, an additional researcher and 3 research assistants evaluated the transcripts and re-identified these themes.

Methodological rigor in qualitative research needs to answer four questions: truth value (credibility), applicability, consistency, and confirmability.¹⁵ Action to be taken to support confirmability included: field notes made following each interview and detailed records of the study’s methods and analysis for each research team meeting. These sources provided an audit trail for identification of potential biases and tracking of coding decisions. Consistency is sometimes labeled external reliability in qualitative research and means that the process of the study has been “reasonably stable over time and across researchers and methods”.^{16p278} Consistency was achieved through close adherence to the study methods including interview technique consistency and validation of coding between multiple coders. Truth value addresses the authenticity of the data and is equivalent to internal validity: do the findings of the study “make sense” to the people being studied? Actions taken to support truth value included an iterative process of data collection being guided by simultaneous data analysis, validation of key points at the end of each interview; and peer debriefing through the ongoing review by the research team. Transferability refers to whether the conclusions have any further import or generalizability to other contexts or groups. The sample included a “theoretically diverse” representation of a variety of injuries with differing degrees of complexity. Thick description (actual quotes) is provided in discussion of findings and themes so that readers can make their own comparisons with other settings.

Findings

The analysis and interpretation of the participants’ description of their experience during their hospitalization for occupational-related trauma resulted in identification of a core variable, Game Plan. Patients and their family moved

across the trajectory of health care from entry into the health care system after injury to finally discharge to home or rehabilitation services. The model that developed from the data was illustrated by using the metaphor of the playing field as the patient moved from the site of the injury to the tertiary care setting and then discharged to either a rehabilitation center or to home. The temporal trajectory of the experience was illustrated in the phasing of moving through the health care system, with different players both in and outside of the health care system interacting with the patient at various times and in varying degrees over the course of the treatment and recovery. As depicted in the conceptual model, family members were found to serve as advocates for their severely injured loved ones. The phases and major themes described by the participants are discussed in the following sections.



Entering the playing field: Characteristics of injury

All of the patients in the study were men. They ranged in age from 33 to 60 years with a mean age of 44 years. Their occupations included landscaping, construction, maintenance, firefighting, fork lift operating, roofing, timber cutting, and emergency response and preparedness. Their injuries had occurred primarily as a result of falls or equipment failures. For example, one man fell off a ladder from approximately 6 feet and broke his hip. Another had fallen out of a fire truck going about 20 mph. More severe injuries occurred understandably with higher falls. One participant, a roofer had fallen about 30 feet into a basement, breaking both wrists and hitting his head. Another participant had gotten his pants caught in a conveyor belt hole, which resulted in a degloving injury, leg fracture, and severed arteries and tendons. Most of the individuals had multiple

trauma and several had sustained significant head injuries. All the participants were able to participate in the interviews at the time of the study. Most participants were in good health at the time of the injury; however a few had been involved in previous accidents, one of which was occupationally related. Others reported a past medical history to include hypertension, high cholesterol, asthma, and previous sport injuries. Many were local residents at the time of the injury; however, several had been transferred to the tertiary care facility in which the study was conducted.

At the time of the injury, understandably, stabilization and treatment of the injury was the primary concern. Spouses present during the interview related their shock and concern for the patient at the time of the injury and their efforts to effect a transfer to the trauma center for definitive treatment if the patient had been initially admitted to a community facility following the accident. One patient had been injured in the Middle East so his transfer was accomplished over a period of weeks as he was stabilized.

On the playing field: Negotiating the course of hospitalization

Upon arrival at the trauma center, definitive treatment began for the injuries. Families were able to join the patient and provided support throughout the hospitalization. They often became the buffer between the patient and the medical team in negotiating and coordinating treatments and care decisions. This was especially important for patients with head injuries, who may or may not have been conscious or cognizant early in the hospitalization. There were a number of hurdles for some families in maintaining and providing support. Visiting hour restrictions, distance from home, and high parking fees placed burdens upon families wanting to be there for the patient. As one spouse noted, “I just want to check on him, and they were like, ‘if we let you in some other families can see you, we want to see our family [member] too’.” Another family member, noted, “At first, they allowed me to be here, almost constantly, but now, they have me [on] visiting hours”. Since the interviews occurred close to the time of injury, only a few families mentioned issues with insurance and being out of work for an extended period. Most were covered by Worker’s compensation and had already been in contact regarding coverage. Many patients were facing extended periods of recovery so financial strain could pose financial hardship in future months if they were the only employed adult in the family.

Families recognized how busy staff were caring for other patients and wanted to be present to help the patient while also feeling reassured with their recovery. This need for presence was described by one spouse,

I think the one thing that would be nice, if they would just allow one person, you know like the wife or immediate family, to be here 24 hours a day.....You know, I can understand that they cut back... It’s just that when he needs something, - I can go get it, you know, if he needs anything, because they’re busy, they’re

doing their own thing. They are not prepared to help with the things he needs help with..... .

Once stabilized, the patients entered a period of time in which they were recovering from the initial injury, perhaps undergoing additional surgeries, or being transitioned into rehabilitative care. During this period, what strongly emerged from the data was a concern for care coordination that seemed to run throughout the hospitalization and was labeled “game plan”. Patients and families alike identified contradictions, misinformation, and deficiencies in communication from the health care team regarding treatment plans and rehabilitation needs. There seemed to be a lack of an overall plan or coordination that organized specialist care and discharge plans. Families reported receiving mixed messages regarding a potential discharge date as well whether the patients would be transferred to rehab facilities or receive home care. As one spouse noted “I did get kinda upset this morning, and I had some different ones that actually came in this morning and said he was going to be leaving today. I was like huh? What I gonna do with him[sic]? I can’t even get him on an airplane and fly him home and what am I going to do with him when I get him home?”

Communication seemed to be the primary goal for patients and families in understanding the game plan. As one spouse related, “ I feel bad sometimes about having to say that I need a doctor to come in and talk to me and ask what’s the plan, what’s the plan- and there is no plan. Finally, somebody saw me crying today, and they said hang on just a minute, and then somebody came in and sat down and said, “well what we’re gonna do is this, this...”, but I was told three different times today three different things. So yeah you do have a communication problem.” Other indications of families’ frustration included statements such as “we were in limbo about that” and “Dr X says he doesn’t know why he is still here.” Most often these gaps were related to the multiple specialties involved in the patient’s care. The spouse of one patient with multiple injuries described her frustration, “you have teams you know you have, the way I understood team “B” and [Dr X] was the attending, overall attending, I don’t think I ever met him. Then we had [Dr Y] and [Dr Z] working on his leg and his hand but it was very unclear on who kind of oversaw it all and who could then be providing us with that information....”. The patient verified his account by noting, “I think that’s part of the challenge though because you’ve got one team working on my leg, one team working on my hand, another team working on my wounds, weren’t really painting us the big picture and walking us through that.”

Who’s on First?

One theme that was identified early in the interviews was “who’s on first’ defined as a lack of understanding by the patient and families as to who was actually leading the health care team decisions and coordinating the multiple specialties involved in treating the multilevel trauma. Sometimes that confusion was also shared by the health care team members themselves. As one family member

shared, “that was going on because there are so many different units that are taking care of my different needs. One unit is like, “oh you are fine as far as we are concerned”. Another one is like, “we are kind of waiting for them to make decisions.... And that it’s great because there’s all these special teams and stuff, doctors get together to help you, but it seems like, you know, it’s kind of tough that you can’t get a straight answer out of anybody ever about what’s going with your case”.

When asked if they knew who their primary care person was, one patient replied, “No I don’t. So many names come past me, I just can’t keep up” and another expressed, “but you would think that they would give you that one person’s name, this is the guy calling the shots or this is the girl calling the shots.”

Families were often not able to schedule a family conference where providers could spell out a clear plan and address patient and family concerns. “ I think it will be nice if the doctors would stop by and when there is visiting hours just to touch base with the family, you know. Now that I am sticking to visiting hours, I don’t see them. And I don’t get to know the answers that I had been getting when I was here around the clock” illustrates one family member’s frustration with this dilemma. Other families who were traveling into the trauma center or who could only come in the evening also missed seeing the physicians and getting information firsthand.

Of course by the time I get here, I don’t see the doctors. I just see the nurse. So it’s hard for me to ask questions then.” One spouse with a similar experience noted this conflict also and made a suggestion, “And you know, they are very strict on their visiting hours and they do their rounds in the morning so it is very difficult to know how [patient] and I can get information together. So that [patient] isn’t having to repeat himself and on top of that he is not going to be in condition to remember everything...

Where are you?

Even when families were present, it was most often difficult to coordinate timing to catch primary members of the care team. “I have family there but no doctor, you know, never showed up or even leave [sic] word where he could meet with the family or something.” A typical scenario was related by one family member,

I mean he got out of the OR in the afternoon, 1:30 – 2:00 o’clock and we really weren’t able to speak to a resident until the next day to really get a more full briefing (de-brief) I mean, I did mention to the nurse that I thought the surgeon was trying to reach me but you know [family member] did indicate that they could try me on my cell phone since I was in Baltimore with him. But I was never reached and you know [family member] and I that afternoon tried to get information. I know in an academic setting of a hospital it is probably rare that you would actually probably speak directly to a surgeon that instead you would

be talking to the resident, but I just thought there could be improvement in terms of sharing information with us given that [patient] had a surgeon working on his leg and a surgeon working on his hand it would have been really nice the day after the surgery, I mean the afternoon after the surgery was done , if someone could have just come and spoke to us and said, “the surgery went well, this is what was done”.

Many of the family members noted that even when they were present it was difficult to have the surgeons speak directly to them regarding the patient’s status and treatment. Sometimes this was due, as in the above scenario, to the provider’s schedule with other surgeries and clinics. At other times, however, family members and patients were reluctant to “bother” the medical team. “And I realize they are busy, and I learned that from the beginning, so I try not to bother them” seemed to define the reluctance of patients and family to assert their need to speak to members of the team. Case managers could be helpful in filling the gaps in coordination in these types of scenarios. In fact, patients even mentioned this need, “Because I thought there would be like a case manager that would come and speak to us about all of this stuff, and we met with a social worker, they came by and said hi, but, I said “oh you must be the case manager, no I’m the social worker”. That was fine whatever, we actually never met with the case manager. And in hindsight I think it would have been very helpful if we had met with the case manager.”

Nobody does it better

Despite difficulties understanding the treatment plan and who was coordinating care, patients and families members recognized the excellent and skilled care they had received at the trauma center and were grateful for the efforts made on their behalf. Pain management was an obvious priority. Many members of the health team were cited as especially helpful. For example, “the primary care nurse goes through the exercises with me, gives me papers, goes through the motions of what I need to do at home so I won’t have dead limbs, She’s been great!”; “me and the case manager got on the track and it ran pretty smooth”; and “these are some amazing people” expressed the positive interactions with health team members. One patient summed up his experience,

I have to go on record and say we are extremely impressed and pleased with the shock/trauma and the medical treatment that we got. I’ve just been amazed at the expertise and the, ah, I highly recommend shock/trauma as a hospital. And so overall we extremely happy, we just think some of the information, how to get information, and how you learn through the process can be improved.

Moving around to third and home base

Approaching discharge, the lack of communication and coordination seemed to exacerbate an already stressful experience. Mixed messages were received in

terms of discharge timing and location. Families and patients felt rushed and unsure of who would either coordinate the discharge process or after-discharge rehabilitation or care. Not only did families need to arrange transportation home in some cases, they were also arranging other services such as physical therapy, occupational therapy, special equipment delivery, and/or home care visits.

Anticipated needs

Many participants mentioned social workers, physical therapists, nurses, and home care services that assisted them to identify care needs before discharge. Sometimes it was unclear as to who would arrange the services once identified and some care gaps emerged from this communication failure. As one wife explained her situation with her husband who had become febrile post discharge:

We were really hoping that a nurse would come out on Monday because a proper medically trained nurse to look at these wounds, make sure, but then we got the call Monday morning that the home care service pulled out. I only was sent home with medical supplies for the weekend, so of course we ran out of supplies on Sunday night and.....finally on Tuesday we get a call saying that they think that a nurse could come out Wednesday morning but no one was available on Tuesday so that left me having to take care of him again for another day.

Fortunately, the patient did not suffer ill effects from this gap in services before home care was in place.

Families were not always informed about what services would be needed and the reasons. "My understanding from, like literally a minute conversation with the physical therapist as he was getting [patient's] equipment and stuff was that he was ordering the home physical therapy to try to get [patient] more comfortable with the specialized walker and crutches and to also start building his endurance". At times, identifying what the patients would need at discharge appeared haphazard and again, not as well coordinated as the level of injuries sustained by this group of patients would have indicated. The coordination seemed fragmented as each specialty service would identify care continuity based upon the particular services they were providing and not seeing the "big picture". Patients and families were sometimes left on their own to set up the home services, not really understanding what to communicate to the agency or company. For example, this family member explained "the physical therapist said I'm going to send a PT to your home, I said that's great, but could you elaborate a little on what we can expect, so we know when we speak to the company that is supposed to be provided it what we should be saying."

Rush job

This theme was related to the feelings family members experienced regarding the last minute decision to discharge the patient, precipitating a flurry of getting services arranged to continue care.

I just really feel like there is that delicate balance of not rushing the discharge, I mean obviously those beds are needed so you don't want have someone stay longer than they have to, but you also want to make sure that the patient and who ever that primary care giver or person is going to be helping him or her through that discharge, you know, getting settled back at home. They also need to be comfortable and feel like they have all the information and know what to expect.

Unfortunately however, patients and families found that they often were misled or not kept informed about a pending discharge. This seemed to be related to the general communication and coordination of care issue as in this situation:

I know there's no exact science to the exact time he would be discharged, we were trying to get an estimate, so on Friday I know they did rounds in the morning, but [patient] really wasn't told when he was likely to be discharged, so ...we asked the nurse if there was anyone they could speak to to get a better sense of whether [patient] would be discharged over the weekend, are we talking Monday? It was at 2 o'clock and the nurse comes back and says, "oh well they say he can be discharged today.

Better care coordination would have prepared this family for discharge and avoided the stress of quickly gathering personal items and setting up care at home. As related by another spouse, "we had to arrange transport back home and they were kind. They said we are not kicking you out but you are ready to be discharged so it was like a bit of a frantic flurry trying to arrange everything and again, I'm not sure if this is normal, it seemed a little panicked".

Hand off

Some of the patients were discharged to home while others moved to a rehabilitation center either in the same area or one local to their home. Most faced some ongoing treatment for their injuries. "I mean it is just one day at a time right now. And we know that he is going to be leaving for rehab when he gets well enough to do that. And then from there, we are going to have to wait and see." Some family members felt again that they were often not included in the decision-making regarding discharge. "How prepared we are, and this is the other thing too, when they were giving us the information, no one ever asked me if, and maybe I should have said this, whether I was working or whether I was just able to stay at home and take care of [patient]." Understandably, for those outside the immediate vicinity of the trauma center, arrangements for discharge were more challenging to find services near the patient's home. This offered some relief to the family's traveling in to see the patient, however, "it felt like it

was upon us to pull all the pieces together to make sure we had everything covered.”

Case managers could reduce the fragmentation and perhaps circumvent some of the frustration for these families such as for this patient who related, “ I would think the case manager should actually physically see the patient. He is supposed to be the one providing care, or at least coordinating the care, I mean I spent so many phone calls, to find out when the nurse was going to be coming out, to see when the physical therapist is going to be coming out.” As one patient summed up, “I can also say the discharge process ... cannot be under estimated in terms of you’re letting a guy who was just in intensive care out on his own.”

Discussion

This study provided a patient & family perspective about their experience during a hospitalization for occupational-related trauma. The qualitative data obtained from this study supported previous findings that deficits in communication and information transfer are common.⁵ The data revealed that patients and families alike identified contradictions, misinformation, and deficiencies in communication from the health care team regarding treatment plans and rehabilitation needs.

This pilot study also demonstrated a lack of care coordination for these severely injured workers, which led to a significant loss of information across levels of care. The major themes identified deficits relating to a comprehensive “game plan” for the care coordination of these patients which often led to “chaotic” discharge experience. Although most all of the participants recognized that they had received excellent and skilled care, they also identified numerous barriers and gaps in the care coordination and discharge process.

This study has highlighted the need for further research relating to the process of transitioning across levels of care among severely injured workers. No published studies were found that addressed the vital role that the family plays in the transfer of information relating to their loved ones’ health condition. Although the small sample size limits the generalizability of the findings, this data provides a foundation for the development of a standardized case management instrument that could be used to transfer timely and accurate patient information thereby facilitating case management across levels of care. In the future, this research team hopes to conduct a larger study, utilizing a newly developed summative case management tool that facilitates information capture and transfer for these severely injured workers.

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