

# Moving Patients Around: A Field Study of Coordination between Clinical and Non-Clinical Staff in Hospitals

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## ABSTRACT

Effective coordination is central to work in organizations. We conducted a field study examining challenges to coordination between clinical and non-clinical staff in the patient transfer process of a major academic hospital. We present one major challenge: lack of information sharing between these staff members and discuss the reasons for and consequences of this challenge to the work in the hospital.

## ACM Classification Keywords

K.4.3 Organizational Impacts: Computer-supported collaborative work, J.3 Life and Medical Sciences: Medical information systems

## General Terms

Design

## Author Keywords

Clinical/non-clinical coordination, medical work, hospitals

## INTRODUCTION

Coordination plays a central role in organizational life. Information systems and processes to ensure smooth coordination are becoming more prominent in modern organizations. For instance, there is an increasing development of awareness mechanisms as features in information systems in order to improve coordination [2].

We have been investigating issues of coordination within the context of hospital work. In hospitals, achieving effective coordination within and across departments is central to providing effective patient care. Most studies of coordination in hospitals have focused on clinical departments and the work practices of clinical staff such as physicians and nurses [1, 4]. However, hospital work requires clinical staff to extensively interact with non-

clinical staff for effective patient care. Thus the coordination between clinical and non-clinical departments is central to the success of the organization. However, clinical and non-clinical staffs often face challenges in coordinating their activities. Furthermore, current health information technologies such as the electronic medical record and computerized patient order entry systems are designed to primarily support clinical staff. They are not designed to support coordination between clinical and non-clinical staff. Therefore, in order to better design information technologies to support coordination between clinical and non-clinical departments in hospitals, we need to understand these challenges.

To study the challenges to clinical/non-clinical coordination, we conducted a field study of the patient transfer process in a large academic hospital. Patient transfer is a crucial and little examined aspect of hospital work. Efficient patient transfer is instrumental for improving access to care, minimizing the length of stay and reducing the wait times for patients [3]. The patient transfer process is an appropriate venue to explore these challenges because it requires coordination between clinical and non-clinical departments to be successful. In this paper, we highlight a prominent coordination challenge: the lack of information sharing between clinical and non-clinical staff. We discuss factors affecting this challenge and its consequences to the patient transfer process.

## COORDINATION IN HEALTHCARE

Coordination in healthcare has received prominent attention in CSCW [1, 4]. Most studies of coordination in hospitals have primarily focused on clinical departments. Ren et al., [6] examined coordination in a hospital operating room environment. They investigated how coordinating among multiple groups including patients, physicians, nurses and other staff led to breakdowns in their work. Symon et al. [7] studied the use of a radiological request form to schedule radiology examinations. They examined issues that affected clinical inter-departmental coordination such as status influences, social and political uses of information, conflicts between goals, and the role of formal and informal practices in coordination. Although the paper highlights the importance of information sharing between clinical departments, it does not focus on coordination activities between clinical and non-clinical departments.

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Although CSCW has long been interested in coordination and collaboration issues in healthcare, most field studies have primarily focused on the work of clinical staff (e.g., [1, 5]). In this study, we shift the focus to the significant role played by non-clinical staff in healthcare work. The two significant contributions of this note to the CSCW community are to provide a better understanding of (1) the challenges to effective coordination between different groups (i.e., clinical and non-clinical) in the healthcare domain and (2) the factors that affect information sharing between these groups (e.g., prioritization of local clinical work practices and status differences).

## STUDY SETTING AND METHODS

The study was conducted in three departments (one non-clinical department and two clinical departments) of a major suburban academic hospital in northeast United States that are involved in patient transfer.

### Inpatient Access Department (IPA)

The IPA is a non-clinical department responsible for the admissions, discharges and transfers in the hospital. The bed placement team of IPA consists of 2 to 3 non-clinical staff who assign beds for the hospital and 2 nurses who support the non-clinical staff. For example, when a non-clinical staff member receives a request for a bed with a diagnosis that does not sound familiar, the nurse would explain the bed requirements for the patient based on her diagnosis and condition to the non-clinical staff member. They play an important role in facilitating transfers between departments by ensuring that a bed is available for the patient who is being transferred.

### Emergency Department (ED)

The ED contains a total of 36 beds that are often fully occupied. During each shift, the ED team comprises of 1 charge nurse, 3 attending physicians (physicians in-charge), 12 to 17 staff nurses, and 1 housekeeper. The charge nurse (CN) is the head of the nursing staff during the shift and plays a prominent role in the coordination of patient transfer activities in the department.

### Neurosciences Department (NSD)

The NSD is divided into two sub-units: the neurosciences intensive care unit (NSICU) and the neurosciences intermediate care unit (NSIMCU). The NSICU is a 16 bed unit with 1 charge nurse, 8 staff nurses (2:1 patient-nurse ratio) and an ICU team comprising of a senior resident, a nurse surgery resident and a neurology attending and the patient's attending. The NSIMCU is a 15 bed unit with 1 charge nurse and 5 staff nurses (3:1 patient-nurse ratio). The CN is responsible for coordination of patient transfer activities within the NSD.

The first author observed over 200 hours of work in the three departments during 2007. Observations were employed to understand the following: departmental work

practices, processes clinical and non-clinical groups followed to complete their tasks; their interaction with artifacts; and current information and patient flows within the hospital. She utilized general observations including shadowing of patient transfer activities in the three departments, watching clinical and non-clinical staff during their tasks, and attending bed management meetings with clinical department heads, nurse manager and IPA staff members. She also conducted 16 formal interviews and a number of informal interviews. The formal interviews were taped and transcribed. Non-electronic artifacts such as transfer forms used during the transfer process were also collected.

## FINDINGS

Patient transfer is a critical but mostly invisible aspect of work in a hospital. Many hospitals are working at one-hundred percent capacity, so the rapid transfer of patients is crucial. One of the key features to successful coordination between clinical and non-clinical departments in the patient transfer process is the complete exchange of information. For example, during patient transfers between ED and NSICU, non-clinical information such as patient name, age, DOB, sex, estimated length of stay, admitting physician name, isolation requirements, and fall precaution information is essential for the IPA staff to have in order to process the patient transfer order. Although critical information dependencies exist between these departments, there was often limited information shared between the clinical (e.g., ED, NSD) and non-clinical departments (e.g., IPA).

### Lack of Information Sharing

The limited information sharing between the two staffs fall under two categories: unintentional and intentional.

The *unintentional lack of information sharing* between the IPA, on one hand, and the ED and NSD, on the other, was common. This was caused by the diverse clinical/non-clinical information requirements. Each group had their own distinct information needs. Clinical staff members often found it difficult to anticipate the needs of the non-clinical staff and vice versa as evidenced in the example.

*The NSD CN forgot to inform the IPA staff that a NSIMCU room was closed for maintenance reasons. Without this information, the IPA staff pre-assigned and made arrangements for a patient to be transferred to that room. Once she learned that a room was closed from her manager, the IPA staff member stated: "I don't know about that. Nobody told me that it was down. I called the CN but he did not inform me about this".*

The CN did not think that it was important to notify the IPA that the room was not ready because of routine maintenance. However, without this information, the IPA staff assigned a patient to that room. This resulted in an inappropriate patient transfer decision that necessitated a

change to the original assignment and to the patient transfer activities in the sending department. Although the unintentional lack of information was somewhat common, the *intentional lack of information sharing* was a surprisingly frequent occurrence in the hospital. For example, an IPA staff member commented that patient transfers took place between units without their knowledge.

*“Sometimes the patients are transferred out of the bed (Department A) and they arrive in the other unit (Department B) and we don’t know it. If the other unit (B) would have accepted the patient and let us know that they received the patient, then the unit that sent the patient (A) wouldn’t be able to hide their bed”.*

One of the reasons that the clinical staff does not share information with the IPA immediately is to postpone the work involved in preparing for transfers coming into the unit such as creating patient folder, paper charts, name tags, and arranging medical equipments in the room. By not notifying the IPA, the CN in (A) can prevent an immediate assignment by the IPA. This “hiding” of beds often occurs near shift change. However, this intentional delay in sharing information affects the work activities of the IPA staff in two ways. First, the IPA staff tries to assign an available bed in (B) without realizing that the bed has already being used by a transfer patient from (A). Second, IPA staff does not assign any patient to the available bed (from where the transfer was made) in (A) based on the assumption that the bed is currently being occupied. This leads to a critical resource such as a hospital bed being kept idle, thus creating a logjam in patient movement.

### **Factors Affecting Information Sharing**

We describe three factors that affected information sharing between the clinical and non-clinical staffs.

#### *Lack of Awareness*

We found that information sharing was affected by the lack of awareness of work practices between the clinical and non-clinical staff and how each defined their patient transfer goals. For example, IPA defined the patient transfer goal to be appropriate assignments of beds (i.e., co-localization), which was in stark contrast with the patient transfer goal of clinical departments that placed importance to quality of patient care and patient safety (irrespective of location). A CN stated that the *“IPA just don’t have the concept of the amount of time it takes, they can’t tell by looking at the orders if somebody really needs the IMC or not”*. This lack of mutual understanding of each other’s goals had a detrimental effect on the amount of information shared between departments, which consequently led to coordination conflicts.

#### *Prioritizing Local Clinical Work Practices*

The clinical staff primarily focused on local patient care activities and did not pay much attention to inter-departmental activities such as coordinating with non-

clinical staff for patient transfer. This prioritization of local work activities involved clinical work being performed at expense of non-clinical work that affected the information shared between clinical and non-clinical staff. For instance, transfers often took place from ED to operating rooms (OR) without any information being provided by the admitting physician to the IPA. Although the clinical staff was able to provide rapid care to their patients this way, the IPA staff often found it difficult to find beds for the post-op patients because they did not know about the transfer in the first place. As an IPA staff member states: *“We will have people in the emergency room that will go right to the OR and no transfer order of any type was entered and then they might go to recovery and we don’t know anything about the patient”*. The lack of pre-notification of internal transfers required the non-clinical staff to do additional work to cope with the challenges of last minute bed requirements.

This prioritization of local work practices also occurred when physician orders were inconsistent with patient diagnosis and bed requirements. For example, most ED physicians place all their orders under the “urgent” care category. An IPA staff member commented on how ED physicians defined urgency as a matter of habit for all their patients: *“the majority of ones especially from the ED are either urgent or you may see an emergent, but normally its urgent”*. Defining urgency for most of ED patients irrespective of their condition helped in achieving rapid patient flow within ED, thereby resulting in effective coordination within the ED but not with the IPA.

#### *Status Differences*

Prior healthcare studies on coordination have investigated the issue of status differences between clinical staff [7]. However, perceived status difference between clinical and non-clinical staff was an important factor that affected information sharing. The clinical staff in hospitals because of their “direct” involvement in patient care believed that they had the ultimate authority on any issue dealing with patient care (including patient transfer) and this affected how they viewed their relationship with the non-clinical staff. For instance, a clinical staff was resentful of the loss of this decision-making autonomy to the non-clinical staff of the IPA. As one of the nurses stated: *“We are at their (IPA) mercy. They decide when a patient can move”*. A CN further noted that the *“IPA have too much control”*.

The clinical staff did not like the idea that they needed to get the IPA’s permission to do their work. Ironically, the IPA staff had the exact opposite view. They believed that they had very little power to enforce any “control” over the clinical staff.

### **DISCUSSION**

Information sharing is essential to successful coordination especially in information intensive and complex environments such as hospitals. However, the lack of information sharing, whether intentional or unintentional,

during the patient transfer process can lead to patients not receiving appropriate care in a timely manner. In particular, the lack of information sharing between clinical and non-clinical staff members can affect patient *co-localization* efforts during patient transfer. Co-localization refers to placing the patient in a bed within a unit that can provide the appropriate care for the patient. An example of co-localization is a patient who has severe neurological problems being transferred to a bed in neurosciences intensive care unit. In the NSICU, the patient can receive appropriate care for her problems.

Non co-localization occurs when a patient is placed in a unit that does not provide the appropriate type of care. For instance, a surgical patient who is transferred to the medical intensive care unit instead of a surgical intensive care unit would receive care but not the necessarily the appropriate type of care. The failure to appropriately co-locate patients can have severe ramifications beyond the care that the patient receives. It can also result in delayed discharges, insurance denials for patients staying in inappropriate services, and frustration of clinical staff because of limited knowledge to deliver care for patients belonging to other services.

Patient co-localization is impacted by the lack of information sharing between clinical and non-clinical staff members at two points in the patient transfer process. The first occurs during the initial patient transfer decision when the information that the clinical staff provides the IPA impacts where the patient is sent. The IPA may make an inappropriate transfer assignment if they do not get the appropriate information from the sending clinical department. The second point occurs when the patient does not require the level of care provided by a particular unit but the unit staff does not inform the IPA immediately of the change in the patient's condition. In this case, the lack of sharing information by the clinical staff on the status change of patients could lead to delays in transfers, thereby increasing the length of stay of patients in inappropriate locations.

The issues with lack of information sharing and patient co-localization raise the question of how hospitals have been able to, for the most part, smoothly transfer patients all this time facing these coordination challenges. They have been able to do this for two reasons. First, when clinical units are not busy, there is sufficient exchange of information between the clinical and non-clinical staff for smooth patient transfer. Second, when there wasn't sufficient information, non-clinical staff members have developed workarounds to ensure that they get the information necessary to transfer the patient. For instance, one workaround used by the IPA staff to deal with the lack of or inconsistencies with physician transfer orders is to personally contact the physicians to either verify or change orders in order to find an appropriate hospital bed for the patient. However, these workarounds also increased the

tensions between clinical and non-clinical staff. For example, one physician commented on the role of IPA as resource managers to be irrational because of their lack of expertise and clinical training for making bed assignment decisions. Yet, without these workarounds by the IPA staff, patient transfers would be very difficult in hospitals.

## CONCLUSION

Providing effective patient care in hospitals requires coordination between a wide variety of healthcare providers and support staff. Patient transfer is a key clinical function in a hospital. Patients have to be moved to the appropriate setting that will provide them the level of care necessary for them to recover. At the same time, it is also a complex organizational activity that requires not only coordination between clinical staff but also between clinical and non-clinical staffs. There are a number of issues such as professional status and awareness and recognition of different departmental goals that effect the coordination between the clinical and non-clinical staff. As we examined the details of the patient transfer process, the important but mostly invisible work of non-clinical staff was highlighted. We plan on continuing to explore their role in greater detail in this and other healthcare settings.

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