

Transfer Troubles

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Case Objectives

- Recognize that transfer of patients between hospitals is common.
- Understand the frequency of errors and adverse events in the transfer of patients between hospitals.
- Describe how communication lapses can lead to errors and adverse events in the transfer of patients between hospitals.
- List interventions, including the use of guidelines and standardization, which can make patient transfers between hospitals safer.

The Case

An orthopedic surgeon at a small community hospital contacted an emergency department (ED) physician at a large academic medical center about a patient transfer. At this hospital, standard procedure called for all transfers from outside hospitals to be seen and evaluated in the ED. The orthopedic surgeon briefly described a 92-year-old woman with a history of dementia who had a left hip fracture. They had taken her to the operating room, but she developed low blood pressure before the case and the anesthesiologists were not comfortable managing her care at the community hospital. The referring orthopedic surgeon also spoke with the on-call orthopedic surgery resident at the tertiary care center and conveyed the same brief history. Minimal other clinical details were discussed.

The patient was transferred to the tertiary care center and was clinically stable on arrival to the ED. None of the notes or clinical documentation from the referring hospital arrived with the patient other than her demographic data. She was quickly admitted by the orthopedic surgery resident and prepped for surgery the following morning.

Early the next day, the patient was taken to the operating room for surgical repair of her hip fracture. During induction of anesthesia, the patient rapidly became hypotensive and required vasopressors. The surgical team proceeded, but the case was complicated by significant hemodynamic instability. The patient survived the surgery, but experienced persistent postoperative hypotension (shock) of unclear cause and could not be weaned from the ventilator. Ultimately, care was withdrawn and she died a few days after surgery.

Notably, following her operation on hospital day 2, medical records arrived from the referring hospital and the anesthesia notes were reviewed. They were handwritten and difficult to read but described "profound hypotension" at the start of the case and that the patient had actually suffered a full cardiac arrest (written as "unable to obtain BP...no palpable pulse...arterial access...case cancelled, to PACU."). There were few other details in any of the notes about the cardiac arrest.

Although it was not completely clear to the orthopedic team or anesthesiologists what happened, all agreed that her case would have been managed much differently had they known more about the events at the referring hospital and that such knowledge could have potentially prevented her death.

The Commentary

The quality and safety of patient transportation, whether it be for non-emergent or critically ill patients, should "revolve around getting the right patient to the right place at the right time by the right people with the right transport receiving the right care throughout."⁽¹⁾ At some stage in this case's transport process, this goal was not achieved, potentially contributing to the patient's death. While this may be an extreme case, it highlights the inherent safety risks associated with transferring patients between health care organizations.

Transfers between hospitals are common. Although it is difficult to accurately determine how many patients are transferred each year worldwide ⁽²⁾, as many as 1 in 20 critically ill patients admitted to an intensive care unit (ICU) in the United States will be transferred to a different ICU.⁽³⁾ A recent United Kingdom study also indicated approximately 51,000 inter-hospital transfers of acutely ill patients (defined as those who required intervention and vital sign monitoring during transfer or a clinical escort) occurred over a 1-year period in Scotland (population 5.1 million).⁽⁴⁾ Of these, 73% were urgent (within 4 hours), 21% were emergent (immediate), and 7% were planned transfers. In addition to these emergent transfers, many transfers do involve medically stable patients and are non-emergent, as in this case. In fact, non-emergent transfers may be more common than those of critically ill patients, as up to 90% of transfers can be non-emergent.^(4,5) Patients can be transferred between health care sites for a number of reasons: specialized care is not available at the referring organization, as in the above case; particular investigations cannot be carried out at the referring site; a lack of ICU beds; or simply to improve prognosis. The number of patients requiring transfer to another health care organization to access appropriate services will only grow as health care becomes increasingly centralized and specialized.

Errors can occur in the transfer process at any time—before, during, or after the transfer. These errors can lead to adverse events.⁽⁶⁾ While it is unclear how frequently errors occur for non-emergent transfers, it has been shown that adverse events can occur in 1% to 34% of critical care transfers.^(4,7,8) In one study, approximately 17% of the adverse events resulted in potential harm to patients, although the mortality rate was extremely low (0.04%).⁽⁸⁾

Communication Errors

Communication errors are the most frequent cause of errors associated with inter-hospital transport.⁽⁷⁻¹⁰⁾ This case highlights what can potentially go wrong when communication is poor. At all stages of the

transfer process, communication appeared to be inadequate. Poor communication started at the referring hospital, before the patient had been transported, with only brief clinical details discussed verbally by the sending and receiving clinicians. The majority of all communication errors in one study were attributed to inaccurate or incomplete information in the transport process.(8) Furthermore, an investigation into communication errors associated with inter-facility transport determined that 42% of calls between the sending facility and the communication center that organized the transport contained a total of 65 errors (some calls had multiple errors) of either commission (documented information was incorrect) or omission (information was not documented).(9) Such upfront communication lapses can potentially affect the appropriateness and safety of the transport process, such as where the equipment or personnel are not adequate for the patient's condition.(10,11) Once the patient arrives at the receiving facility, it is important for the receiving clinicians to have access to key clinical information from the referring institutions, including laboratory and imaging results, to aid them in treatment of the patient. In this case, no documentation was transported with the patient. In other reported cases, documentation has been illegible or contained inadequate or incomplete patient information. A new problem has emerged in recent years: If sites use electronic medical records, then there can be issues with the interoperability of the electronic systems between facilities.(3,10,12) In this case, it was only at a later date, following the patient's operation, that the medical record arrived, and then it appeared to be illegible and also lacking complete information. Despite the incompleteness of the information, had it arrived with the patient, it likely could have aided the clinicians in their management.

In the described case, it is clear that communication errors throughout the process were a primary contributor to the final outcome. However, other issues can also affect the quality and safety of the transport process, whether it is for critical or non-emergent patients: the efficiency of the transfer, the use or presence of guidelines for safe transportation, technical problems occurring during transport (e.g., equipment failures, incomplete supplies), inappropriate transport, or inappropriate personnel accompanying the patient.(6,7,10,13,14) For example, in one study, the authors attributed 30% of adverse events to technical problems, such as a breakdown or shortage in the oxygen supply en route.(7) In another study, inexperienced junior doctors frequently participated in inter-hospital transfers, which for some clinical conditions is contrary to guidelines, thus placing patients at risk.(13) In this particular case, it is unclear what level of personnel accompanied the patient, although a junior doctor received the patient at the tertiary hospital. This in itself is unlikely to have affected the treatment of the patient; rather, the lack of information available to the resident was more likely to have contributed to errors in patient management.

Improving Transport Process

There are a number of potential means by which the transport process can be improved. Published guidelines highlight the need for clear communication throughout the process, accompanying personnel, equipment, monitoring, and how to prepare a patient for transport.(15) Examples from these guidelines are given in the [Table](#).

Although these guidelines were developed for the transport of critically ill patients, they are equally relevant to non-emergent transfers. In addition, individual facilities and areas often have local protocols and policies, though their presence may be dependent on the individual facility and its geographic location. However, such guidelines, when present, are seldom followed (7,10,13), pointing to the need to build in ongoing

monitoring and educational programs.([2,14,16,17](#)) A systematic review of quality and safety issues associated with non-emergent transport recommended standardizing the transport process.([10](#)) Standardization can be achieved by using transfer forms and/or checklists to ensure that patients are transferred with more complete information and that the transport is appropriate.([12,15,18](#)) With the rapid dissemination of health information technology (IT), such forms and checklists will be increasingly in electronic formats. Use of an electronic ordering system (with required fields) to arrange non-emergent transport has been shown to improve the communication, efficiency, and appropriateness of transport services.([11](#)) In this study, the completeness and accuracy of patient information before a patient was transported improved and appropriate resources (transport vehicle and personnel) were allocated, due in part to information completeness. In the case presented here, one can see how an IT system that ensured transfer of legible and complete patient data from referring to receiving facility might have made all the difference. Because many facilities use different health IT systems, it will be vital to allow such systems to "speak to each other" (interoperability). When such information is not available to the receiving facility, it may be prudent to require a minimum clinical re-evaluation of the patient on arrival to ensure that the necessary investigations are carried out. Establishing a centralized transfer center or dedicated hotline for organizing transport and facilitating the flow of information may help standardize processes, particularly if combined with the use of health IT.([9-11,14](#)) Finally, in addition to standardization, there is evidence of improved safety and patient outcomes when specialist transport teams are used.([19,20](#))

This case demonstrates the hazards of transporting patients between hospitals. In particular, it highlights the safety problems that occur when the process is not standardized and there is poor communication. If best practices described had been employed, the outcome may have been different. Institutions should learn from this case and continue to improve the quality and safety of care patients receive when being transported.

Take-Home Points

- As health care becomes more centralized and specialized, the necessity for inter-hospital transport for critical and non-emergent patients will increase.
- Transporting patients entails inherent safety risks. While many factors can result in adverse events, communication errors are among the most frequent.
- Standardization of practices may prevent or reduce errors. Such standardization can be facilitated through the use of guidelines, or standard forms/checklists, and of information and communication technologies.
- Both centralized transfer centers and specialized teams with highly trained personnel to facilitate transfers can improve safety.

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Table

Table. Sample guidelines for safe transfers.

**Guideline
recommendation**

Example*

Pre-transport coordination and communication	<ul style="list-style-type: none"> • Receiving clinician is provided with full details of the patient's condition. • Transport mode is generally decided by referring clinician in consultation with the receiving clinician based on several factors. • A nurse-to-nurse report should be given between referring and receiving hospitals. • A copy of the patient's medical record, including laboratory and imaging results, should be transferred with the patient. If this delays patient transport, they should be forwarded separately and critical information reported verbally. • Policies regarding the content of communication and documentation between referring and receiving personnel should be established.
Accompanying personnel	<ul style="list-style-type: none"> • A minimum of 2 people, in addition to vehicle operators, should accompany a patient. • If the patient is unstable, a physician or nurse should be in charge during transport. • For a stable patient, a paramedic is suitable.
Minimum equipment required	<ul style="list-style-type: none"> • Minimum transport equipment and medications requirements are recommended for safe transport.[†] • Equipment must be regularly checked to ensure it is functioning.
Monitoring during transport	<ul style="list-style-type: none"> • All critically ill patients should have a minimum level of monitoring. • Status of the patient and management during transport should be recorded in the medical record.
Preparing a patient for transport	<ul style="list-style-type: none"> • The referring facility should ensure the patient is evaluated and stabilized before transport for a safe transfer. • Non-essential testing and procedures should be avoided before transfer. • Critically ill patients require secure intravenous access before transport. • Particular procedures should be conducted before transport for specific conditions.[†] • The medical record and results should be copied for the receiving facility. • A COBRA/EMTALA checklist is suggested for the US to ensure compliance with inter-hospital transport regulations.

*Select examples are taken from the detailed guidelines; please refer to the full guidelines for more detail. (15) [†]Please see the full guidelines for a detailed list.

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