PA PSRS
Pennsylvania Patient Safety Reporting System

Patient Safety Advisory

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Continuous Care Throughout Patient Transfer

Distinct patterns have emerged from a number of serious events and incidents reported to PA-PSRS related to intrahospital transfers involving equipment availability, communication, staff deployment, and readiness of the receiving unit to support the patients' clinical needs and/or to respond to their changing condition. In a previous article (Vol. 2, No. 3–Sept. 2005) we discussed continuity of oxygen therapy during transfers.

Transfer within an institution is a time of patient vulnerability. The literature emphasizes the risk for critically ill patient transports, reporting adverse event rates ranging from as low as 5.9% to as high as 66%.[1-5] The following report to PA-PSRS illustrates the risk involved.

> *72-year-old patient in complete heart block with external pacemaker in standby mode while in ICU. Transported to the OR for emergency permanent pacemaker without the temporary pacemaker attached to leads. Patient's pulse rate became 30.*

PA-PSRS also has received reports of code situations involving non-critical patients when transported throughout the hospital.

> *Patient brought to stress lab with cyanotic lips and nail beds, gray color of face and neck, and mottled trunk and upper extremities and was without a palpable pulse. Resuscitation was initiated, and a code was called. Resuscitation efforts were unsuccessful.*

Transfers from the emergency department and intensive care unit to non-critical care areas are deemed "the most neglected area of intrahospital transports."[6]

> *ED patient received on med-surg unit without the four liters of ordered oxygen. Patient was cyanotic, respirations labored, oxygen sat 83%. Immediate transfer to ICU on 100% oxygen. Patient was intubated in ICU.*
>
> *Critical care patient on lopressor protocol transferred to surgical unit without monitor. When the lopressor was to be given, it was noted that the patient was not placed on a cardiac monitor when admitted to the unit.*

The unstable patient, while being transported through the hospital, is also subject to the limitations of both the transporter and equipment availability and readiness, as shown in the following case:

> *A patient was transported from the ICU for a stat CT scan. The monitor went blank after approximately 20 minutes of battery use. The patient was connected to another monitor. Clinical Engineering was notified and took the monitor for assessment. Staff was instructed on how to check the batteries before using the monitors for transport.*

Research on Patient Transfer

Critical care transfers have been the focus of multiple studies that reinforce the tenuous nature of intrahospital travel.[2-8] Limited attention has been paid to the transferring of the stable patient, but much can be learned from the following published studies, which are generally applicable to any patient transportation situation:

- A study of patients on mechanical ventilation found that the risk of developing ventilator-associated pneumonia was 24.2% among patients who were transferred compared to 5.5% among the patients who never left the unit.[9] This finding was supported by other research but may not be a cause-and-effect relationship.[10,11]
- A 1998 literature review of 14 studies of intrahospital transport of critically ill adults found

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Continuous Care Throughout Patient Transfer (Continued)

that coordination, appropriate level of monitoring, emphasis on patient safety, established protocols, and use of nurses educated on the risks of transporting can improve the patient outcome.[2]

- Another study in 1999 concluded that "equipment failures, disconnects, and power failures occur in more than one-third of the transports and place the patient at unnecessary risk."[12]

A few studies investigated potential improvements in the transfer process but require financial investment either in equipment or changes in staffing patterns:

- The use of a specialty cart attached to the hospital bed expeditiously organized essential equipment for a streamlined transfer process.[13]
- The use of a transport ventilator comparing manual ventilation to mechanical ventilation on transportation concluded that the use of a transport ventilator is "preferable to manual ventilation."[14]
- A "Stat Nurse Program" demonstrated a reduction in the rate of adverse outcomes during transportation for radiological studies at one university hospital.[4] The literature supports the concept of team deployment.[2,4,15]

Whether a patient is in a medical/surgical, step-down, or critical care unit, these lessons learned are applicable to all transfers within the hospital.

Risk of Transport

"Only transport the patient if the benefits of the test or procedure outweigh the risk of transport."[16] When any patient leaves the security of their unit, and especially when the unstable patient is moved, consider whether the newly obtained clinical information is crucial in determining or changing the patient's treatment[15-17] with reported risks of adverse events ranging from 5.9 to 66%. Stevenson cites studies indicating "that 61% to 76% of all diagnostic procedures do not result in a change in patient management."[11] Guidelines for transporting mechanically ventilated patients support this contention. "The literature suggests that nearly two-thirds of all transports for diagnostic studies fail to yield results that affect patient care."[18] Waydhas concludes that about 50% of procedures result in a change in patient management, and Weg concurs.[19,20] Bedside procedures are preferred whenever possible.[17,19] With advanced technology and point-of-care testing, much can be accomplished in the security of the patient's unit.[8]

Transport policies provide the minimal framework from which to begin the effort to improve care; the following guidelines are a place to start and can "remove the guesswork."[5-7] The guidelines are for critical care transports, but the basic concepts are applicable in every setting.

Guidelines for Transfer of Critically Ill Patients

Guidelines for the transfer of critically ill patients were first written in 1993 and revised in 2003 as a collaborative venture by the American College of Critical Care Medicine and the Society of Critical Care Medicine.[17] Highlights include:

- Pre-transport coordination and communication.
- A minimum of two people to accompany critically ill patients.
- Equipment is dependent on the patient's condition but includes a blood pressure device, a pulse oximeter, fully charged battery-operated equipment, a cardiac monitor/defibrillator, appropriately sized airway equipment, and oxygen of "ample supply."
- Drugs for resuscitation and awareness of code cart availability along the way and at the destination.
- Complete set of pediatric resuscitation equipment and medications to accompany infants and children.
- "For practical reasons, bag-valve ventilation is most commonly employed," with acknowl-

Considerations in Intrahospital Transport

- Is this transport necessary for treatment decisions?
- Are special preparations needed?
- Who should escort?
- What equipment and supplies are required?
- Are resuscitation drugs needed?
- Is the receiving unit or department ready?
- What is the agreed time for transport?
- What is the best route?
- Has the equipment been checked?
- Are batteries charged?
- Is the oxygen supply adequate? [17,27]

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edgement that transport ventilators are becoming popular, as they "more reliably administer prescribed minute ventilation and desired oxygen concentrations."

- Maintenance of the same level of basic physiologic monitoring as occurred before transportation.[17]

The guidelines for in-hospital transport of mechanically ventilated patients outline the equipment, personnel, and level of monitoring needed and were revised in 2002.[18] Both a registered nurse and a respiratory therapist are indicated, with at least one team member proficient in airway management and capable of operating and troubleshooting all equipment.

Policy Development to Promote Consistent Care

In order to provide a safe transport, the literature suggests dividing the trip into manageable phases, allowing for an incremental approach to the commonly called "road trip."[6,13,16] Development of collaborative multidepartmental policies and procedures are urged to define the process, equipment, and personnel necessary.[4,10,14,21] Departmental emphasis involves the origin, destination and actual movement of the patient.

The following strategies address the transport process in an organized manner, allowing for prospective and retrospective review of every patient transport, whether the transporting is for a diagnostic study or for admission to another unit. They could be used as the outline for a patient transport policy.

Pretransport Strategy

Communicate

- Discuss the departure/arrival schedule, orchestrate the necessary staff, and determine the route.
- Contact the receiving unit, negotiate the timeline, and discuss and verify the following:
  - The patient's status, providing a brief overview to avoid any last minute misunderstanding.
  - The receiving staff's ability to manage equipment needed in the patient's care.
  - Availability of supplies and equipment.
  - Agree on what physician orders will be implemented pretransport (sedation, pain management, suctioning), and communicate what is done and still needs to be done. This is a critical step when the emergency department is transferring a newly admitted patient.[22]
- Use a call report providing essential patient information, and confirm arrival time.

Coordinate

- Anticipate potential delays and physiologic instability.
- Ready any supplies and equipment that will be needed.
  - Validate battery charges, adequacy of oxygen tank volume, plus 30 minutes additional beyond the expected need.[7,15,16]
  - Verify that drug box is adequately stocked.
  - Stock any supplies unique to the patient such as a replacement tracheotomy tubes, suction catheters, or isolation garb.
- Reserve elevators if necessary.
- Know where the code carts are located along the route and within the unit or department receiving the patient.

Documentation

- Assess the patient and document before the move. A sample checklist is provided by Pope.[16]
- Record any medications given to ease the trauma of the transfer, especially sedation, pain management, and neuromuscular blocks.[23]

Transport - Maintain Consistent Care

- Monitor the patient at the same level as before transportation.
- Document the patient's condition as needed during the transport.
- Communicate, keeping each team member abreast of the patient's condition in route, particularly regarding any unanticipated changes or equipment malfunctions.

Post-transportation - Arrival

- Confirm unit and staff readiness to receive the patient, verifying equipment/supply availability and code cart location.

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- Set the patient up, verifying connections with oxygen, intravenous and equipment whether in a new unit or for diagnostic studies.
- Deliver the "face to face" report, detailing the clinical information according to the responsibility to be assumed.
- Maintain vigilance, and monitor as though still in the sending unit while the patient is in the CT or MRI situation in which visualization may be impeded.[23]
- Document the time of arrival, current patient assessment, and the caregiver assuming responsibility.
- Coordinate the patient's return if needed.

Opportunities for Improvement
Some suggestions obtained from the literature include:

- Use paper or electronic transfer records to summarize the patient's status and provide physician order reconciliation for medications and diagnostic studies.[24,25]
- Use specialized transport teams or "Stat Nurses."[15-17]
- Use "Patient Passport" documents specifying patient identifiers, allergies, whether the patient must be transported with a nurse, and the name of the nurse and physician caring for the patient. The transporter signs the passport, and the technician in the receiving department uses the document for additional verification of patient identity.[26]
- Use portable phones for transporters for immediate access to support staff when a patient's condition has changed.[26]
- Monitor transports internally to assess breakdowns in the transportation process and to determine best practices and/or innovative ways to deal with similar situations in the future.[7]

Conclusion
Emphasis is placed on planning, communicating, establishing policies, and educating staff accordingly. From the time the decision is made to transfer, the process begins with patient assessment dictating the level of intervention to be maintained. The skilled professional must anticipate potential changes in a patient's condition during the transport and the concomitant equipment, supplies, or drugs needed. Coordination of staff to accompany the patient, determination of responsibility upon arrival, and reporting of the patient's condition promotes a smooth transition. The ultimate goal is to provide the patient with consistent care throughout the continuum of care inclusive of the transferring process.

Contraindications to Transporting Ventilated Patients

- Inability to maintain an adequate airway
- Inability to provide adequate oxygenation and ventilation
- Inability to maintain acceptable hemodynamic performance
- Inability to adequately monitor cardiopulmonary status
- Inability to recruit sufficient staff [11,18]

Notes

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The Patient Safety Authority is an independent state agency created by Act 13 of 2002, the Medical Care Availability and Reduction of Error ("Mcare") Act. Consistent with Act 13, ECRI, as contractor for the PA-PSRS program, is issuing this newsletter to advise medical facilities of immediate changes that can be instituted to reduce serious events and incidents. For more information about the PA-PSRS program or the Patient Safety Authority, see the Authority's website at www.psa.state.pa.us.

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