Guidelines for the Transfer of Critically Ill Patients

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American College of Critical Care Medicine
Society of Critical Care Medicine
American Association of Critical-Care Nurses

Introduction

The transport of critically ill patients always involves some degree of risk to the patient and sometimes to the accompanying personnel. Therefore, the decision to transport must be based on an assessment of the potential benefits of transport weighed against the potential risks. The basic reason for moving a critically ill patient is the need for addtional care, either technology and/or specialists, not available at the patient's current location. Provision of the needed modality may require movement of the patient within the hospital to a diagnostic testing suite, operating room or specialized Intensive Care Unit (ICU) or to another hospital. Transport of a critically ill patient from one hospital to another should be from a lower to a higher level of care.

A period of transport is a period of potential instability (1-11). If the diagnostic test or procedural intervention under consideration is unlikely to alter the management or outcome of that patient then need for transport must be questioned. Whenever feasible diagnostic testing or simple procedures should be performed at the patient's bedside within the critical care unit. Risk to the patient during transport can be minimized through careful planning, use of appropriately qualified personnel, and selection of appropriate equipment (11-24). There should be no hiatus during transport in the monitoring or maintenance of the patient's vital functions. The available equipment and skill level of the accompanying personnel must be equal to the interventions required or anticipated for the patient (i.e., an individual capable of endotracheal intubation must accompany any intubated patient or any patient with a potential for airway compromise during an interhospital transport). Ideally, all critical care transports, both intra and interhospital, should be performed by a dedicated, specially trained transport team, but it is recognized that this is not always feasible.

These guidelines represent the minimal standards that should be provided during the transport of any critically ill patient. This document is intended to be a resource for those hospitals that do not have an organized transport team, yet must transport critically ill patients. The standards for organized transport services are considerably more rigorous and have been published by other organizations (19,25-27).

Since it is to be expected that there will be times when a specialized transport team will not be available for interfacility transports, each facility needs to develop contingency plans utilizing locally available resources for those instances when the referring facility will have to effect the transport. A comprehensive and effective interfacility transfer plan can be developed by a systematic approach and comprises four critical elements in an ongoing process. (1) A multidisciplinary team with representatives from medicine, nursing, respiratory therapy, hospital administration and the local emergency medical service (EMS) is formed to plan and coordinate the process. (2) The team then conducts a needs assessment of the facility that focuses on patient demographics and volume, transfer patterns, and available resources (personnel, equipment, EMS, communication). (3) Using the needs assessment as the foundation, a written standardized transfer plan is developed and implemented. (4) The transfer plan is evaluated and refined by the continuous quality improvement process.

Transport Within the Hospital

Each patient care unit shall have written transport policies which address (but are not limited to) the following:

Pre-transport coordination and communication including:

Physician to physician and/or nurse to nurse communication regarding the patient's condition and treatment should

occur preceding and following the transport when the management of the patient will be assumed by a different team while the patient is away from the ICU.

Pre transport confirmation that the area to which the patient is being transported (x-ray, operating suite, nuclear medicine, etc.) is ready to receive the patient and immediately begin the procedure or test for which the patient is being transported.

Notification of ancillary services (e.g., security, respiratory therapy, escort) as to the timing of the transport and the equipment and/or support they will need to provide.

Notification of the responsible physician to either accompany the patient or be aware that the patient is out of the ICU and may have an acute event in another area of the hospital.

Documentation of the indications for transport and the patient's status during transport in the medical record.

Personnel who accompany the patient:

A minimum of two people shall accompany the patient.

One of the accompanying personnel shall be the critical care nurse assigned to the patient or a specifically trained critical care transport nurse. This critical care nurse shall have completed a competency based orientation and meet the previously described standards for critical care nurses (28-29)

Additional personnel may include a respiratory therapist, registered nurse, critical care technician, or physician.

A physician should accompany those patients who have unstable physiology and might need acute interventions that are beyond the scope of standing orders or nursing practice.

Equipment accompanying the patient shall include:

Cardiac Monitor/Defibrillator.

Airway management equipment and resuscitation bag of proper size and fit for the patient.

Oxygen source of ample volume to provide the patient's needs for the projected time out of the ICU with an additional 30 minutes reserve.

Standard resuscitation drugs: for example, epinephrine, lidocaine, atropine, sodium bicarbonate.
A blood pressure cuff.

An ample supply of the intravenous fluids and continuous drip medications (regulated by battery operated infusions pumps) being administered to the patient.

Additional medications to provide the patient's scheduled intermittent medication doses and to meet anticipated needs (e.g., sedation) with appropriate orders to allow their administration if a physician is not present.

For patients receiving mechanical support of ventilation, a device capable of delivering the same minute ventilation, pressure, fractional concentration of oxygen ($FI0_2$), and positive end expiratory pressure that the patient is receiving in the ICU. For practical reasons, in adults an $FI0_2$ of 1.0 is most feasible during transport because this eliminates the need for an air tank and air-oxygen blender. During neonatal transport, $FI0_2$ should be precisely controlled.

A resuscitation cart and suction equipment need not accompany each patient being transported, but such equipment shall be stationed in areas used by critically ill patients and be readily available (within four minutes) by a pre-

determined mechanism for emergencies that might occur on route.

Monitoring during transport:

The patient being transported should receive the same physiologic monitoring during transport as they are receiving in the ICU if technologically possible.

All critically ill patients being transported shall have as a minimum level of monitoring:
Continuous monitoring with periodic documentation of:
Electrocardiogram
Pulse Oximetry

Intermittent measurement and documentation of:
Blood Pressure
Respiratory rate
Pulse rate

In addition, selected patients based on clinical status, may benefit from monitoring by:
Capnography
Continuous measurement of blood pressure, pulmonary artery pressure, intracranial pressure.
Intermittent Measurement of central venous pressure, wedge pressure, cardiac output. Intubated patients receiving mechanical support of ventilation should have airway pressure monitored. If a transport ventilator is used, it should have alarms to indicate disconnects or excessively high airway pressures.

Hospital to Hospital Transfer

Interfacility patient transfers should occur when the benefits to the patient exceed the risks of the transfer. Positive patient outcomes depend on the expertise and availability of nursing and medical personnel and the technology available in the health care system. When a patient needs services that exceed the available resources of a facility, the patient should be transferred to a facility with the required resources (30). The decision to transfer a patient is the responsibility of the attending physician at the referring hospital. Once the decision to transfer has been made, it should be effected as soon as possible. The transport should not further compromise the patient's outcome. Resuscitation and stabilization should begin at the referring hospital, realizing that the patient's problem may be such that true stabilization may only be possible at the receiving hospital.

It is essential for practitioners to be aware of federal and local laws regarding interhospital patient transfers. The Consolidated Omnibus Budget Reconciliation Act (COBRA, 1986) including the 1990 OBRA amendment defines in detail the legal responsibilities of the entities involved. The American College of Emergency Physicians has also published a book entitled Patient Transfers: How to Comply with the Law by Stephen A. Frew, J.D. which reviews the legal responsibilities and the ramifications of noncompliance. It is an excellent resource for any facility involved in the transfer of patients. In general, under COBRA and OBRA financially motivated transfers are illegal and put both the institution and the individual practitioner at risk for serious penalty.(31-33)

Current regulations and good medical practice require that the competent patient or the legally authorized representative of an incompetent patient give informed consent prior to interhospital transport. This must include a presentation of the risks vs. benefits of transport with documentation in the medical record and a signed consent document. If circumstance do not allow for the informed consent process, then both the indications for transport and the reason for not obtaining consent must be documented in the medical record.

The transfer algorithm (Figure 1) has been developed to show the sequencing of events involved in an interhospital patient transfer. It is important to note that in most cases numerous activities will be occurring simultaneously while the patient is being stabilized. The algorithm assists a provider through the transfer process. Once the decision is made to transfer, the referral hospital has accepted the patient, and the mode of transportation has been determined, the actual procedure of transfer begins.

The elements that must be included in an interfacility transfer plan and their minimum standards are:

Pre-transport coordination and communication to include:

The referring physician must contact a physician at the receiving hospital who is authorized to admit patients to describe the patient's condition and to obtain advice about stabilization and transport. The admitting physician at the receiving hospital must have accepted the patient and confirmed that appropriate resources are available at the receiving hospital before the transport begins. The referring and accepting physicians should agree as to who will assume responsibility for on-line medical control during the transport if there will not be a physician in attendance.

The mode of transportation (ground or air) used for transport shall be determined by the transferring physician, after consultation with the receiving physician, based on time, weather, medical interventions necessary for ongoing life support during transfer, and availability of personnel and resources.

The transport service shall be contacted to confirm their availability, inform them of the patient's status and anticipated medical needs during transport, and coordinate the timing of the transfer.

A nurse to nurse report shall be given by the referring facility to the unit (ED, ICU, OR) at the accepting hospital.

A copy of the medical record including a discharge summary and all x-rays shall accompany the patient. This should not delay patient transport.

Accompanying personnel:

A minimum of two people, in addition to the vehicle operator, shall accompany the patient. At least one of the accompanying personnel shall be a registered nurse, physician, or advanced Emergency Medical Technician capable of providing advanced airway management including endotracheal intubation, intravenous therapy, dysrhythmia interpretation and treatment, and basic and advanced cardiac and trauma life support.

When a physician does not accompany the patient there should be a mechanism available to communicate with a physician concerning changes in the patient's status and to obtain additional orders. If this is not technically possible, the registered nurse or advanced EMT accompanying the patient should have pre-authorization by standing order to perform acute lifesaving interventions.

Minimum equipment that shall be available: (See Table 1 for a suggested detailed list)

For Airway and Ventilatory Management:
Resuscitation bag and mask of proper size and fit for the patient.
Oral airways, laryngoscopes, and endotracheal tubes of proper size for the patient.
Oxygen source with a quantity sufficient to meet the patient's anticipated consumption with at least one hour reserve in addition.
Suction apparatus and catheters.
Cardiac monitor/defibrillator.
A blood pressure cuff.
Materials for intravenous therapy including cannulas, solutions, tubing, needles and syringes, and devices for regulation of continuous intravenous infusions.
Drugs for advanced cardiac resuscitation, the management of acute physiologic derangements, and the specific needs of that patient (e.g.,sedatives, antibiotics). (See Table 2 for a suggested detailed list)
Communications equipment to allow contact between the transporting vehicle and both the referring and receiving hospitals.

Monitoring during transport:

All critically ill patients being transported shall have as a minimum level of monitoring:
Continuous EKG monitoring
Intermittent measurement of:
Blood Pressure

Respiratory Rate
Continuous monitoring by pulse oximetry is strongly recommended.

Selected patients, based on clinical judgment, may benefit from monitoring by:
Continuous measurement of blood pressure
Measurement of central venous, pulmonary artery pressure, or intracranial pressure
End tidal carbon dioxide monitoring

Intubated patients receiving mechanical support of ventilation should have airway pressure monitored. If a transport ventilator is used, it should have alarms to indicate disconnects or excessively high airway pressures.

A medical record documenting the patient's status and management during the transport is required.

TABLE 1

TRANSPORT EQUIPMENT

Adhesive Tape
Airway Management - Adult and Pediatric
- 50 ml Flex Tube With Patient Adaptor
- Adult Bag - Valve System With Oxygen Reservoir
- Adult Masks (Small, medium, large)
- End Tidal Carbon Dioxide Monitor
- Infant Medium Concentration Mask With Tubing
- Intubation Kit
  - #1 MacIntosh Blade
  - #2 MacIntosh Blade
  - #3 MacIntosh Blade
  - #4 MacIntosh Blade
  - #0 Miller Blade
  - #1 Miller Blade
  - #2 Miller Blade
  - 1" Adhesive Tape
  - 10cc Syringes
  - Adult Endotracheal Tube Stylet
  - Adult Magil Forceps
  - Booted Hemostat
  - Cuffed Endotracheal Tubes - Assorted Sizes
  - Disposable Scissors
  - Heimlich Valve
  - Laryngoscope Handles
  - Nasopharyngeal Airways
  - Oral Airways - Assorted sizes
  - Pediatric Endotracheal Tube Stylet
  - Pediatric Magil Forceps
  - Scalpel with blade for cricothyroidotomy
  - Uncuffed Endotracheal Tubes - Assorted sizes
  - Water Soluble Lubricant
- Nasal Cannula
- Oxygen Tubing
- Pediatric Bag - Valve System With Oxygen Reservoir
- Pediatric Masks (Small, medium, large)
- PEEP Valve
- Pressure Gauge With Airway Adapter Tubing and Test Lung
- Set Wrist Restraints
- Suction Catheters- Sizes Appropriate for Patient
- Tonsil Suction

Alcohol Wipes
Arm Boards
Arterial Line Tubing and Monitoring Equipment
Blood Pump Bags
Bone Marrow Needle
BP Cuff (Neonatal, Infant, Child, Adult)
Butterfly Needles - Pediatric sizes
Catheter Tip (60cc) Irrigating Syringe

Dressing Sponges
Electrocardiogram Electrodes (Infant, Pediatric, Adult)
Electrode Jelly
Infusion Pumps
Intravenous Administration Sets
- 3 way stopcocks with extensions
- Mini (pedi) drip administration sets
- Regular (macro) drip administration sets
- Y-Blood tubing drip sets

Intravenous Catheters - Assorted sizes 14G to 24G
Intravenous Solutions

1,000 ml Normal saline	500 ml Normal saline
1,000 ml Ringers lactate	250 ml D_5W

Kelley Clamp
Monitor/Defibrillator
Needles - Assorted Sizes
Normal Saline for Irrigation
Pulse Oximeter
Salem Sumps - Assorted sizes
Stethoscope
Suction Apparatus
Surgical Combines

2x2 Sponges	3" Kling
4x4 Sponges	Kerlix

Syringes

1 cc TB	5 cc
3 cc With 20 Gauge Needle	10 cc
3 cc With 22 Gauge Needle	60 cc

Tourniquets
Trauma Scissors

IF APPROPRIATE FOR THE PATIENT
- External Pacer
- Mast - Adult and Pediatric
- Neonatal Isolette
- Spinal Immobilization Device
- Transport Ventilator

TABLE 2

TRANSPORT MEDICATIONS

Adenosine
Aminophylline
Atropine
Bretylium
Calcium chloride
Cetacaine spray
Dexamethasone
Dextrose
Dextrostix
Digoxin
Diphenhydramine
Dopamine
Epinephrine
Furosemide
Heparin
Isoproterenol
Lidocaine
Mannitol
Magnesium
Naloxone
Nitroglycerin intravenous
Nitroglycerin tablets
Nitroprusside
Normal saline for injection
Phenytoin
Potassium chloride
Procainamide
Propranolol
Sodium bicarbonate
Sterile water for injection
Verapamil

Narcotics, sedatives, neuromuscular paralyzing agents added based on anticipated patient need.

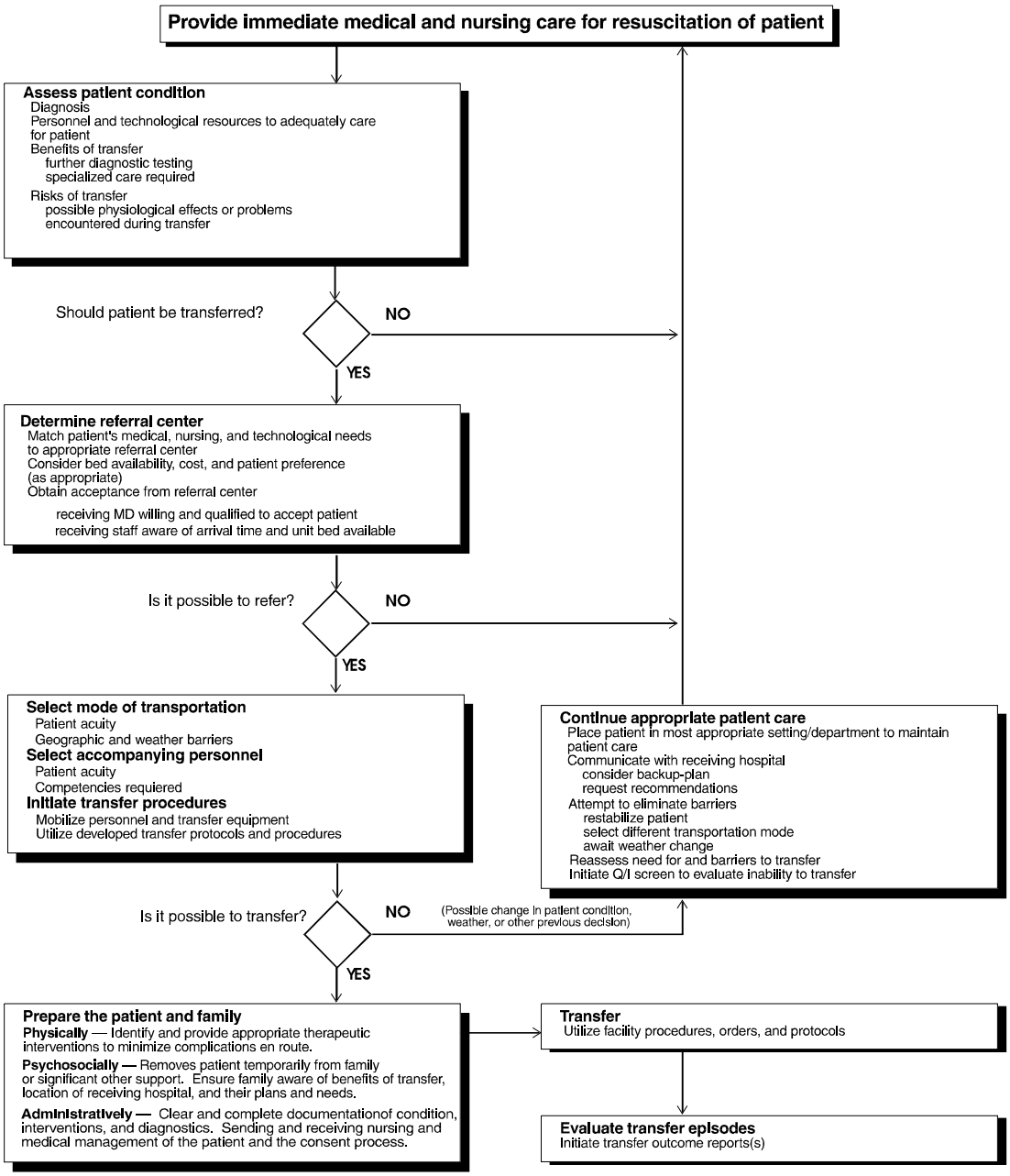

Figure 1. Interfacility transfer algorithm

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These guidelines have been developed by the American Association of Critical-Care Nurses, and by the Guidelines/Practice Parameters Committee of the American College of Critical Care Medicine, Society of Critical Care Medicine, and thereafter reviewed by the Society's Council. These guidelines reflect the official opinion of the American Association of Critical-Care Nurses and the Society of Critical Care Medicine and do not necessarily reflect, and should not be construed to reflect, the views of certification bodies, regulatory agencies or other medical review organizations.

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