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## A Gap, and Opportunity, in the ICU Admission, Discharge, and Triage Guidelines

### To the Editor:

Dr. Nates and colleagues (1) have published an excellent update to the ICU Admission, Discharge, and Triage Guidelines in a recent issue of *Critical Care Medicine*. We believe that the society has an opportunity to lead improvement in the critical care continuum by leading improvement in the interfacility transfer of critically ill patients.

Barriers to accessing care consistent with the guidelines make transfers essential. Fewer than half of hospitals have intensivist-led units, and there is wide geographic variability in access to specialty care (2). Almost 5% of Medicare ICU admissions and over 40% of myocardial infarction patients admitted to nonrevascularization hospitals are transferred between facilities (3).

Community hospitals report significant difficulties in obtaining qualified ambulance crews to perform interhospital transfers, so patients are transported by an amalgam of personnel with varying capabilities (3). Referring physicians retain accountability for the patient during the transport and can choose which providers execute the transport of their patients. They, and the receiving physicians, must understand that not all ambulance services can provide the necessary levels of safety and quality: providers often have little or no training beyond basic paramedic emergency care, and most paramedic ambulances in the United States carry neither an IV infusion pump nor a mechanical ventilator. Paramedic protocols often lack direction for basic tenets of critical care such as vasoactive medication adjustment and mechanical ventilation.

Although the rates of in-transport adverse events are not well reported, clinically significant events must be at least equal to the 8% rate seen in intrahospital transport (4). The use of specialty teams, both in and out of the hospital, makes patient transport significantly safer and may be associated with clinical, resource utilization, and outcome improvements (5, 6).

Specialized teams and training produced impressive achievements in inpatient critical care, and the same strategies should translate successfully to the system used to transfer critically ill patients between facilities. An approach to improving interfacility transport consistent with Society of Critical Care Medicine's own guidelines would include:

- A transport team with at least two patient care providers, in addition to the vehicle operator(s), both with critical care

transport certification, and one of whom is a registered nurse, physician, or midlevel practitioner.

- High-quality initial and recurring education consistent with the care required for high-risk patients in a resource-limited environment and representing critical care transport as a subspecialty of both critical care medicine and transport.
- An actively involved physician medical director with population-appropriate critical care expertise.
- State licensure of ambulance services at a critical care level.
- Robust data collection and management to facilitate system analysis, either associated with the oversight of state licensure or via a federal link to reimbursement.
- A Centers for Medicare and Medicaid Services relative value unit for critical care transport, as the current specialty care transport relative value unit inadequately recognizes and reimburses the additional resources needed for patients requiring critical care.

The critical care subspecialty has added value and patient benefit to the healthcare system. The undeveloped infrastructure in critical care transport presents the same wealth of opportunities.

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## The authors reply:

We appreciate the feedback from Frakes et al (1), and we would like to thank them for highlighting this important subject. The authors distinguished several gaps and opportunities in standards for the interhospital transport of critically ill patients; among them: the barriers to accessing transport care consistent with the admission, discharge, and triage guidelines (2), the challenges in resource-limited facilities, and the lack of standardization in qualifications for personnel, including education, training, and experience levels. They provided an approach to improving interfacility transport providing bullet points that would, in their opinion, be consistent with the Society of Critical Care Medicine's (SCCM) own guidelines. We agree with most of their points and would like to add a few comments.

The recently published guidelines are a compromise between scope and succinctness. The original draft included a section on "Regionalization of Critical Care," which also included recommendations for critical care transport. However, because SCCM has already published a guideline on intra and interhospital transport (3), this section was removed to manage document length and novelty. The transport guidelines addressed many of the concerns in the authors' letter, including evidence for pretransport coordination and communication, personnel and equipment required, patient evaluation and preparation, and necessary monitoring. The guidelines provided a useful interfacility transport algorithm (Fig. 1 in [3]). There are risks of interhospital transport, and we agree that there are processes and personnel required to minimize them. Standards for interhospital transfer are not the same as ones required for intrahospital transports. The complication rates differ between the two. On average, most interhospital transports have higher acuity and have reported complications rates of 15–34%; most being mortality and changes in hemodynamics and mechanical ventilator requirements (4–7).

Two of the authors' concerns are not fully addressed in the guidelines. For education standards and financial/reimbursement challenges, there is a paucity of published literature. Although these issues are addressed in other organizational publications (8), they are subject to ongoing investigation and expert discussion. In 2006, the National Highway Traffic Safety Administration published a guide for interfacility patient transfer that addresses some education and remuneration concerns (9). In 2012, the Association of Critical Care Transport established a transport standards project, which resulted in published critical care transport standards that address many of the concerns put forth by the letter to the editor and can be found on their website (9). We agree that education standards and valued-based

reimbursement are essential for safe critical care transportation. Most of the literature surrounding these topics has arisen from the trauma and the neonatal transport literature (10–15).

One of the next steps should be to update the evidence-based standards for the transport of critically ill patients; certainly, not all of this can be derived from the neonatal and trauma transport literature. The American College of Critical Care Medicine guidelines published in 2004 on the intra and interhospital critical care transport will, after update, improve with the inclusion of more recent published information. As we enter an era of value-based healthcare, there is a need for more research into critical care transport with special focus on education and financial resources and specific metrics required for reimbursement.

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