



Published in final edited form as:

*Crit Care Nurse*. 2014 February ; 34(1): 16–29. doi:10.4037/ccn2014573.

## Adaptation of the AACN Synergy Model for Patient Care to Critical Care Transport

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### Abstract

Today's health care delivery system relies heavily on interhospital transfer of patients who require higher levels of care. Although numerous tools and algorithms have been used for the prehospital determination of mode of transport, no tool for the transfer of patients between hospitals has been widely accepted. Typically, the interfacility transport decision is left to the discretion of the referring provider, who may or may not be aware of the level of care provided or the means of transport available. A need exists to determine the appropriate level of care required to meet the needs of patients during transport. The American Association of Critical-Care Nurses (AACN) Synergy Model for Patient Care is a patient-centered model that focuses on optimizing patient care by matching the characteristics of the patient with the competencies of the nurse. This model shows significant promise in providing the theoretical backing to guide the decision on the level of care necessary to complete interfacility transfers safely and effectively. This article describes a new tool inspired by the AACN Synergy Model for Patient Care to determine the appropriate level of care required for interfacility transport.

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Critical care transport includes the interfacility transport of patients who require critical care commensurate with the level of care provided by a physician or registered nurse.<sup>1</sup> The paramedic level of care is most common in the prehospital setting, but a registered nurse is the primary caregiver in more than 95% of critical care transport missions.<sup>2</sup> The necessity for interfacility transport is increasing for a multitude of reasons, including the development of regional intensive care unit (ICU) facilities and the availability of specialized surgical procedures and time-sensitive interventions.<sup>3,4</sup>

The triage decision regarding the transport of an acutely ill patient requires consideration of multiple factors. Typically, the practitioner may decide which transport agency will complete the transport, evaluate the patient's needs during transport, determine a mode of transport, and specify when the transport should occur. Experience of the authors (SS, WS, AR), however, indicates that patient-related factors such as predictability and complexity, or transport factors such as adverse weather or road conditions, are not consistently addressed

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Financial Disclosures

This work is funded in part by a grant provided by the National Institute of Health (NIH TL1 TR000441).

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in the triage decision. No universally accepted, clear guidelines for making an informed triage decision are available.

The purpose of this article is to describe the early development of a new tool for determining necessary level of care during transport. It is inspired by the American Association of Critical-Care Nurses (AACN) Synergy Model for Patient Care<sup>5</sup> and based on the proposition that transport level of care must be determined by the needs of the patient, including resiliency, vulnerability, stability, complexity, resource availability, participation in care, participation in decision making, and predictability. Nurses' characteristics are also a component of the triage decision. The descriptions here are the initial developmental steps and are theoretical at this time. Matching the patient's needs with the appropriate providers could reduce the risk of poor outcomes for patients.

## Background

A primary indicator for interfacility transfer can be a specific diagnosis such as ST-segment elevation myocardial infarction.<sup>6</sup> Owing to the time-sensitive nature of moving a patient with ST-segment elevation myocardial infarction to a facility capable of performing percutaneous coronary intervention, many facilities without that capability have developed well-rehearsed algorithms<sup>7</sup> to make the transfer process to a previously determined facility that does offer percutaneous coronary intervention go quickly and smoothly. Most transfers, however, do not fall into such a category, and the referring provider must negotiate a transfer with a provider from 1 or more potential receiving facilities.

The burden of responsibility for determining the mode and time of transfer is generally placed upon the referring provider, with or without input from the receiving facility.<sup>8,9</sup> He or she must weigh factors such as the patient's condition, knowledge of local transport capabilities, weather, travel time, and geography, among others. Air transport is often chosen over ground transport because the competencies of the flight personnel are often perceived to be higher than those of ground teams.<sup>6</sup> It is a common misconception that the level of care provided by different transport agencies is equal given the same mode of transport, yet there is evidence that specialty retrieval teams from the receiving facility have reduced the occurrence of adverse events such as prolonged hypotension and hypoxia and decreased time to definitive treatment.<sup>7</sup> Education and skill levels vary widely from one agency to another.<sup>2,10</sup> The referring provider must consider multiple factors and a significant amount of data, some of which he or she may not be aware of or have access to. The known and, more importantly, the unknown factors could have a substantial impact on the patient and the transfer for which the referring provider takes responsibility. No widely accepted tool exists to assist practitioners in an appropriate selection of transport level of care. One aspect critical to triage is the use of a tool to make the process more than an arbitrary decision of the provider.<sup>11,12</sup>

Numerous attempts have been made to create and apply triage tools to the process of planning critical care transport. Werman et al<sup>13</sup> reported on the use of an original triage tool to determine mode of transport to tertiary care for cardiac patients. Those researchers examined the influence of using ground transport time and 3 physiological markers in the determination of air versus ground transport of cardiac patients. Results of that study indicate that the level of care provided on each mode of transport is equivalent but the level of care provided is not indicated. Another triage tool, The Transport Risk Assessment in Pediatrics (TRAP score) was evaluated by Kandil et al<sup>14</sup> for use in determining the destination unit of transported pediatric patients. However, the tool was not used to determine mode of transport or level of care required for the transport. Another triage tool was used to guide international repatriation requests.<sup>15</sup> This tool looked at age, geographical

location, and infrastructure to determine the urgency of these requests. Although these tools worked well in the contexts in which they were developed, none of them attempt to address patients' characteristics, as described in the AACN Synergy Model for Patient Care, nor do any of the models address the knowledge, skills, and experience of the transport nursing staff.

Two other tools, the Therapeutic Intervention Scoring System and the Modified Early Warning System, yielded poor prognostic performance and did not differentiate for interfacility level of care required to transport the patient safely.<sup>16</sup> The Risk Score for Transport Persons<sup>17</sup> showed some discriminatory power for predicting instability during transport, but made little association between the scoring system and a differentiation in transport personnel. Van Lieshout et al,<sup>18</sup> however, in a survey of intensivists, found that the level of interfacility personnel was the most important factor in determining "transportability." They reported that by optimizing the level of care, even the most critically ill patient could be transported safely.

## The AACN Synergy Model for Patient Care

It would be beneficial to the patient to base decisions about the transport level of care on a model that focuses on the needs of the patient. The AACN Synergy Model for Patient Care, developed by a group representing the AACN, is a patient-centered model that is focused on the needs of the patient, the competencies of the nurse, and the synergy created when those needs and competencies match.<sup>5</sup> The original purpose of the model was to provide a theoretical framework for certified practice. It seeks to define nursing beyond a set of tasks and instead defines nursing through higher-level characteristics and competencies. The levels of patient characteristics and nurse competencies occur on a continuum and may vary with time. The Synergy Model for Patient Care has been used in a variety of circumstances and for a variety of purposes. Examples of recent uses include staff development,<sup>19</sup> building a nursing productivity measure,<sup>20</sup> and care of patients with acute coronary syndromes.<sup>21</sup>

The 8 characteristics of patients in the model include resiliency, vulnerability, stability, complexity, resource availability, participation in care, participation in decision making, and predictability. A patient is evaluated on each of the 8 characteristics according to their capacity in that category, and assigned a numeric value: either 1 (very low), 3 (moderate), or 5 (high). For example, a patient evaluated for resiliency, or the ability to return to baseline level of functioning after an illness or injury, is rated a level 1 if the patient had a very low level of resiliency, a 3 for moderate resiliency, and 5 for a high level of resiliency. Each characteristic is evaluated similarly.

The 8 characteristics of nurses in the model include clinical judgment, advocacy and moral agency, caring practices, collaboration, systems thinking, response to diversity, facilitation of learning, and clinical inquiry. Similar to the evaluation of a given patient, a nurse may be evaluated by using the characteristics of a nurse on a similar scale of 1 to 5 based on strength in an area from competent (1) to expert (5). According to the AACN, "Synergy results when the needs and characteristics of a patient, clinical unit, or system are matched with a nurse's competencies."<sup>5</sup> Historically, the Synergy Model for Patient Care has been used in a wide variety of settings from inpatient care to the military.<sup>22-24</sup>

The final component of the AACN Synergy Model for Patient Care is outcomes. There are 3 levels of outcomes. The first set of outcomes is derived from the patient and includes function, satisfaction, comfort, and other patient-centered foci. Nurse-derived outcomes include presence or absence of complications, the extent to which care or treatment objectives were attained, and physiological changes. System-derived outcomes are recidivism and cost/resource utilization.<sup>5</sup>

## Adaptation of Synergy Model to Critical Care Transport

The individual making the triage decision in the interfacility critical care transport process carries the responsibility of ensuring that the most appropriate transport mode, time, and level of care are provided. An inappropriate decision in any of the 3 areas can have serious implications for the patient and the health care system, which could include an inappropriate destination unit for the patient, deterioration in the patient's condition, patient/caregiver mismatch, or even a patient's death. The predominant system places the full responsibility of this decision on the referring provider, who has no universally accepted tool to guide this judgment.

A provider from the referring facility initiates an interfacility transfer by communicating a transfer request to an admitting clerk at a potential receiving facility. Generally, a clerk then follows facility-specific processes for finding an accepting provider. A conversation takes place between the referring and receiving provider, and once the transfer is accepted and a bed is assigned, the referring facility staff is notified of the bed assignment and given a phone number to call nursing report. In most cases, staff from the referring unit makes transport arrangements with a local transport agency. Typically, a call-taker at the transport agency completes a transport-specific form (Table 1), and the closest team available is dispatched to complete the transport. Triage in critical care transport is almost universally based on various devices and interventions such as invasive catheters and medications.<sup>1</sup> Provider involvement in the transfer process varies widely depending on the setting, although the referring provider generally writes a medical order for transport. The purpose of developing this tool is to challenge the present triage process, and rather, focus on the needs of the patient and the clinical competencies of the transport staff selected.

The AACN Synergy Model for Patient Care provides a well-established theoretical basis on which to develop a new triage tool, the Transport Triage Tool (Table 2). Table 2 shows the linkage between the AACN Synergy Model for Patient Care and the Transport Triage Tool. Use of the tool is expected to determine appropriate level of transport staff and thus improve patients' outcomes through assignment of appropriate staff, while increasing efficiency of scarce transport resources. Trained transport personnel are infrequently involved in the transport triage decision. Tertiary referral facilities, however, which use their own retrieval teams, may use these specialized teams in the triage decision. At these facilities, each transfer request can be evaluated by using a tool designed specifically for the purpose of evaluating the patient's characteristics and needs and aligning transport level of care and mode of transport to best meet those needs.

Operationalizing the association between patient characteristics and level of care is still theoretical at this point and will be the subject of future research. If each category is equal in importance, the user could take any measure of central tendency (ie, mean, mode, or median) and use this as the basis for selecting the appropriate level of care. It is likely, however, that some factors may be deemed more important than others and as such may be weighted more heavily. Future research will focus on providing empirical data to support an appropriate decision. At the present stage of development, numerous permutations are being examined to determine those values that most accurately determine an appropriate level of care. Once an appropriate level of care is determined, an appropriate mode and time can be determined through a combination of resource availability, decision trees, and geographic factors.

## Nursing Implications

The Synergy Model for Patient Care underscores the necessity for the nursing skill set in the care of and decision making about critically ill patients. Through the adaptation of this

model to the interfacility transport triage decision, the nursing continuity of care is extended from the sending critical care area to the receiving critical care area. Nurses have a place in the collaborative care process as part of the team ensuring holistic, safe care for critical care patients in the unstructured environments of transport.<sup>25</sup> Specifically, most states require that at least 1 crew member of a critical care transport unit be a registered nurse.<sup>1</sup> Two clinical exemplars that use the newly developed triage tool are presented next.

## Exemplar Cases

The Synergy Model provides us with a unique mechanism of evaluating the needs of a patient during transport. Likewise, our adaptation using the Transport Triage Tool provides us with a similar mechanism for objectively quantifying the level of care provided by a transport agency. Once completed, an unbiased assessment of the patient's needs exists parallel to an unprejudiced appraisal of available resources. The final step is interpreting the needs of the patient and appropriately selecting a level of care capable of meeting those identified needs. The following exemplars provide insight into this process.

### Exemplar 1

A 48-year-old man came to the emergency department at a community hospital with a 3-day history of progressive weakness and shortness of breath. He had a history significant for mild chronic obstructive pulmonary disease, coronary artery disease with 2 coronary stents placed 6 months ago, and hypertension. Cardiac enzyme levels were normal; the level of brain natriuretic protein was elevated, indicating fluid overload and heart failure; and electrocardiography showed an old inferior wall myocardial infarction, age indeterminate. Uncompensated heart failure was diagnosed and treated with diuretics, and the patient was admitted to the ICU. His hospital course was complicated by development of frequent intermittent ventricular tachycardia and hypotension, now requiring vasopressor support and intravenous amiodarone. An echocardiogram showed a nearly akinetic left ventricle with an ejection fraction of 10%. No evidence of renal compromise was apparent (ie, serum creatinine levels were normal), but he had decreasing urine production. The treating provider elected to transfer the patient to a tertiary facility for further evaluation and management and for possible evaluation for heart transplant.

The treating provider called the transfer line at the tertiary facility, 81 miles away. A 4-way conversation followed between the treating provider, the cardiology fellow, the hospital transfer coordinator, and the nurse practitioner from the transport team of the receiving facility. The patient was accepted for transfer, the hospital transfer agent assigned a cardiac ICU bed, and the nurse practitioner on the transport team completed the transport triage evaluation. The triage evaluation was based on the adaptation of AACN Synergy Model for Patient Care into the Transport Triage Tool, and evaluated the patient's needs on 8 separate characteristics. His current support included 2 peripheral intravenous catheter sites, a vasopressor being actively titrated, an anti-arrhythmic infusion at a continuous rate, and oxygen at 4 L/min via nasal cannula. He had no invasive monitoring, no central venous access, and no cardiac assist devices such as an intra-aortic balloon pump or ventricular assist device. Current vital signs were blood pressure 88/50 mm Hg (mean arterial pressure, 62 mm Hg), heart rate 104 beats per minute, respiratory rate 26/min, and an oxygen saturation of 93% on 4 L/min. He was somewhat anxious, requiring benzodiazapines on an as-needed basis. The completed triage evaluation for this patient is shown in Table 3.

This patient's transport triage evaluation finds 6 categories of level 1, 1 category of level 3, and 1 category of level 5 (see Table 2 for definitions of levels). Additionally, the patient is getting worse despite reasonable care at a community level ICU. Based on these findings, this patient's level of care during transport should be at the provider level, based on the



nurse characteristics of clinical judgment, systems thinking, and collaboration. An advanced practice nurse will match the patient's needs in these areas with the prescriptive authority and clinical judgment present at this level of nursing practice. The patient will now be more vulnerable because of the stressors of the transport environment of care. This patient has safety needs during transport that can best be monitored and responded to by the advanced practice nurse. The first safety need is the requirement for precise arterial pressure monitoring via an arterial catheter placed by the advanced practice nurse. Noninvasive blood pressure monitoring during transport is often challenging because of vibration and motion during transport. The second safety need is the need for prescriptive authority because of the presence of an infusion of vasopressor medication that may require titration along with the need to manage fluid balance and the possible interaction of the benzodiazapines. This level of complexity cannot be handled effectively under a protocol-based system and requires the presence of a prescriptive provider.

## Exemplar 2

A 68-year-old woman came to the emergency department at a community hospital with a 1-week history of dark, tarry stools, and abdominal pain. She was weak and dyspneic on exertion. Her history was significant for osteoarthritis for which she takes anti-inflammatory drugs, and chronic rate-controlled atrial fibrillation, for which she takes warfarin. She had a hemoglobin level of 7 g/dL, a hematocrit of 22%, and a platelet count of 175000/ $\mu$ L. Her international normalized ratio was supertherapeutic at 4.5, which was treated with vitamin K in the emergency department. She was mildly orthostatic, but otherwise hemodynamically stable. She was admitted to the telemetry unit for blood administration, anticoagulant regulation, and cardiac monitoring.

After initial stabilization of the patient's condition by infusion of 2 units of packed red blood cells, endoscopy revealed a bleeding duodenal erosion that could not be successfully cauterized. During the procedure, the patient vomited and aspirated. She quickly desaturated and required intubation. She returned to the ICU hemodynamically stable, requiring no vasopressor support, on ventilator settings of assist/control with tidal volume of 480 mL, respiratory rate 16/min, fraction of inspired oxygen 60%, and a positive end-expiratory pressure of 5 cm H<sub>2</sub>O. Following surgery, the family requested a transfer of the patient to a "better" hospital. The tertiary facility of their choice was 50 miles away.

The referring provider contacted the intensivist at the requested facility, and the 4-way conference proceeded with the critical care transport department of the receiving facility using the Transport Triage Tool. At this time, the patient had started treatment with antibiotics, and no blood products were currently infusing. Vital signs were blood pressure 135/84 mm Hg, heart rate 84/min, respiratory rate 16/min on the ventilator, and 96% oxygen saturation on 60% inspired oxygen. She had 2 large-bore peripheral intravenous catheters but no arterial catheter. The results of her triage evaluation are shown in Table 4.

The results of this triage tool revealed 5 categories of level 3, 2 categories of level 5, and 1 category of level 1 (see Table 2 for definitions of levels). She has the most level 3 categories. Her only level 1 category is participation in care, which one could argue has a lower level of priority during transport than other categories. These results indicate that the registered nurse is the most appropriate level of provider in this case. No immediate needs that should be addressed before transport but are currently unmet are identified, and there is no reasonable expectation of deterioration during transport that requires assessment and prescriptive intervention. The nurse characteristics most indicative here are advocacy, caring practices, and clinical judgment (see Table 2 for descriptions of these characteristics). The nurse has the capacity to protect this intubated and sedated patient, monitor and recognize deteriorations in condition, and use standardized protocols to maintain the patient's sedation.

## Discussion

Both of these exemplars demonstrate that determination of the appropriate level of care during transport is a multifactorial decision that must be centered on the needs of the patient at this time. At this stage, no attempt has been made to link the patient's care needs with a particular means of transport such as a ground ambulance or a helicopter. That secondary decision is based on a different set of variables, which are beyond the scope of this article, but will be the focus of future research. The exemplars demonstrate that level of care is a primary concern that must be determined first regardless of the mechanism of travel.

Many details still need to be addressed before this Transport Triage Tool is ready for introduction into practice. This article seeks only to explore and introduce the possibility of using the AACN Synergy Model for Patient Care and a Transport Triage Tool based on this model. A forthcoming study will explore further development and weighting of specific variables and characteristics of patients in the triage process. Some aspects still to be determined include the following:

- How many level 1 categories are required to make a level 1 transport triage decision?
- Does it make a difference which characteristics are level 1?
- Weighting of the characteristics will need to be considered, as shown in Exemplar 2.
- Time to complete the Transport Triage Tool

We are in the process of establishing validity by using a predictive model and examining interrater and intrarater reliability through a retrospective study approved by the institutional review board. We will continue to examine clinical relevance with our expert providers, and the many benefits of involving nurses with validated nursing instruments in the decision-making process. A further step needed is the development of measurable outcomes linked to the Transport Triage Tool. For example, clinical outcomes might include the number of adverse patient events, complications of interventions initiated by the transport team, and satisfaction of patients, their families, and facilities (friends, community).

An additional variable is the time sensitivity of a decision in the triage process. What characteristics warrant immediate transport, and which characteristics can wait? Which characteristics, if any, indicate that the patient should be transported by a lower level of care in the interests of the time-sensitive nature of the diagnosis or treatment if that is the only transport agency immediately available? Many questions remain unanswered, but the development of a sound framework based on a strong theoretical basis will guide the triage process and increase the quality and safety of care for patients requiring interfacility transport.

## Conclusion

Interfacility transport of patients has taken place for many years, and although its use continues to grow, the rationale for determining appropriate transport staffing remains poorly understood and underdeveloped. Growth in interfacility transport will continue as changes in the delivery of health care lead to the development of regionalized health systems that consolidate specialized centers of care to academic medical centers in urban locations. The predominant current approach is not designed to determine an appropriate level of care during transport. Referring providers must make a judgment with only experience and intuition as a guide. The transport triage process lacks any theoretical framework and is

inconsistent in terms of providing patients with relative assurance of safe and reliable care during interfacility transport.

The authors propose that a new triage tool based on the AACN Synergy Model for Patient Care provides a theoretical framework and guidance in the provision of interfacility nursing care. This tool is developed with the potential to differentiate the level of nursing care required during this time of instability and change for the patient. Results of use should improve outcomes for both patients and nurses.

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**Table 1**

Example of brief transport form

Date	
Time	
Patient name	
Date of birth	
Referring facility	
Bed	
Referring physician	
Referring phone number	
Receiving facility	
Accepting physician	
Bed assignment	
Diagnosis	
IV, oxygen, monitor?	
Infusions?	

Abbreviation: IV, intravenous catheter.

Table 2

## Original transport triage tool

Patient characteristic	AACN definition	Triage tool adaptation	Triage tool example
Resiliency	The capacity to return to a restorative level of functioning using compensatory/coping mechanisms; the ability to bounce back quickly after an insult	Minimally resilient; unable to mount a response; minimal reserves	Multiple comorbid conditions (CRF, uncontrolled IDDM, with sepsis); chronic debilitating illness (NYHA class 3 HF); single event beyond individual's ability to respond (LV rupture)
		Moderately resilient; able to mount a moderate response; able to mount some compensatory response	Chronic illness with decreasing ability to independently respond as evidenced by repeated hospitalizations and/or ED visits
		Highly resilient; able to mount and maintain a response; strong reserves	Acute isolated illness or injury without confounding comorbid conditions
Vulnerability	Susceptibility to actual or potential stressors that may adversely affect patients' outcomes	Highly vulnerable; susceptible; unprotected; fragile	Physiologically dependent on technology or continuous intravenous medications (infusions or frequent boluses) to maintain homeostasis
		Moderately vulnerable; somewhat susceptible; somewhat protected	Requires technology or pharmaceuticals for improved condition, but could tolerate significant interruptions without threat to health
		Minimally vulnerable; safe; not fragile	No technological or chemical requirements to maintain homeostasis
Stability	The ability to maintain a steady-state equilibrium	Minimally stable; labile; unresponsive to therapies; high risk of death	Requires frequent medication or ventilator titrations
		Moderately stable; able to maintain steady state for limited time; some responsiveness to therapies	Condition is changeable but would not be adversely affected by no interventions for intervals
		Highly stable; responsive to therapies; low risk of death	Unlikely to need therapeutic intervention to maintain homeostasis during transport
Complexity	The intricate entanglement of 2 or more systems (eg, body, family, therapies)	Highly complex; intricate; vague; atypical presentation; multiple interacting technologies, therapies, and comorbid conditions	MODS; mechanical ventilation secondary to failure of nonrespiratory systems; AKI secondary to sepsis secondary to pneumonia
		Moderately complex; moderately involved patient dynamics	One or 2 body systems or therapeutic modalities that have low to moderate interaction; status post ICH on vent
		Minimally complex; routine; clear cut; typical presentation	Single system, process, or therapeutic modality
Resource availability	Extent of resources (eg, technical, fiscal, personal, psychological, and social) the patient, family, and community bring to the situation	Few resources; needed resources to survive/thrive not available at present location	Needed resource, expertise, or therapeutic modality inaccessible at present location such as interventional cath lab, immediate life-sustaining surgery; leaking thoracic aneurysm with no thoracic surgery immediately available
		Moderate resources; insufficient resources to survive/thrive at present location	Therapeutic intervention locally available is sub-optimal, such as medical management when surgical intervention is needed long term; type B dissection hemodynamically controlled and pain-free but needs OR
		Many resources; all necessary resources available; transfer at patient/family request	All appropriate therapies available at present location
Participation in care	Extent to which patient or family engages in aspects of care	No participation; patient unable to provide any measure of self-care	Significant neurological or physical derangement makes self-care impossible

Patient characteristic	AACN definition	Triage tool adaptation	Triage tool example
		Moderate participation; patient able to provide self-care with assistance	Requires assistance in routine self-care due to physical or other impairment
		Full participation; patient can fully participate in self-care activities	No significant physical or other impairment that serves as a barrier to routine self-care
Participation in decision making	Extent to which patient or family engages in decision making	No participation; patient/family unable to participate in decision making	Physical or other impairment makes patient/family unable to participate in decisions regarding care
		Moderate participation; patient/family require significant assistance in decision making	Family but not patient capable of making informed decisions regarding care; intratransport decision making requires contingency planning
		Full participation; patient/family fully able to make informed decisions	No physical, mental, social, psychological, legal impairment in decision making
Predictability	A characteristic that allows one to expect a certain course of events or course of illness	Not predictable or predictably negative; uncertain, uncommon patient population or illness; not following a predictable clinical course	Clinical course during transport not predictable due to uncommonness, deviation from common course; predictably negative course due to pathophysiology (large brainstem ICH), or combination of associated factors (CVA postthrombotic)
		Moderately predictable, wavering; clinical course could go either direction	Common process at critical time that may or may not follow predictable course (MI s/p lytic); complications possible but not immediately expected (resuscitated septic shock in first 24 hours)
		Highly predictable; certain; common patient population/illness following predictable course	Common etiology following predictably positive course

Rating	Triage tool adaptation	AACN definition	Nurse characteristic
1	Advanced practice nurse-led; synthesizes multiple sources of data; anticipates problems; multidisciplinary collaboration to optimize final disposition	Clinical reasoning, which includes clinical decision making, critical thinking, and a global grasp of the situation, coupled with nursing skills acquired through a process of integrating formal and informal experiential knowledge and evidence-based guidelines	Clinical judgment
3	Registered nurse-led; collects complex data; recognizes trends; recognizes limitations and seeks appropriate resources to improve patients' outcomes		
5	Paramedic-led; collects basic level data, uses protocols to complete goal of transport		
1	Advanced practice nurse-led; improves, deviates from, and individualizes practice and guidelines to meet the present and anticipated needs of the patient/family; reviews current literature and research and incorporates into practice	The ongoing process of questioning and evaluating practice and providing informed practice; creating practice changes through research utilization and experiential learning	Clinical inquiry
3	Registered nurse-led; questions current policies and practice; looks for alternatives		
5	Paramedic-led; strict adherence to protocols; EBP used only to the extent of current protocols		
1	Advanced practice nurse-led; anticipates needs of patient and patient's family both during and after transport; promotes safety through avoidance of hazards	Nursing activities that create a compassionate, supportive, and therapeutic environment for patients and staff, with the aim of promoting comfort and healing and preventing unnecessary suffering; includes, but is not limited to vigilance, engagement, and responsiveness of	Caring practices

Rating	Triage tool adaptation	AACN definition	Nurse characteristic
		caregivers, including family and health care personnel	
3	Registered nurse–led; tailors caring practices to individual patient’s needs; anticipates needs		
5	Paramedic-led; bases care on standards and protocols; no anticipation of future needs		
1	Advanced practice nurse–led; seeks opportunities to teach and be taught; recruits diverse resources when necessary to optimize patient care; Communication at a collegial level with providers from both referring and receiving facilities	Working with others (eg, patients, families, health care providers) in a way that promotes/encourages each person’s contributions toward achieving optimal/realistic patient/family goals; involves intra- and interdisciplinary work with colleagues and community	Collaboration
3	Registered nurse–led; seeks learning opportunities; elicits others’ advice and perspectives		
5	Paramedic-led; willing to be taught, coached, mentored; open to contributions		
1	Advanced practice nurse–led; develops, integrates, and applies multiple strategies based on patient/family needs/strengths; looks beyond current transport and hospitalization to optimize long-term outcomes; uses new resources as needed	Body of knowledge and tools that allow the nurse to manage whatever environmental and system resources exist for the patient/family and staff, within or across health care and non-health care systems	Systems thinking
3	Registered nurse–led; develops strategies based on patient/family needs/strengths; looks past transport to inpatient needs; recognizes need to obtain resources other than self		
5	Paramedic-led; limited strategies; outlook limited to duration of transport; sees self as key resource		
1	Advanced practice nurse–led; responds to, anticipates, and integrates cultural differences into plan of care; tailors care when possible, including alternative therapies	The sensitivity to recognize, appreciate, and incorporate differences into the provision of care; differences may include, but are not limited to, cultural differences, spiritual beliefs, gender, race, ethnicity, lifestyle, socioeconomic status, age, and values	Response to diversity
3	Registered nurse–led; inquires about cultural differences and impact on care; accommodates differences in plan of care		
5	Paramedic-led; culturally aware		
1	Advanced practice nurse–led; works on behalf of patient, family, and community; patient and family drive moral decision making	Working on another’s behalf and representing the concerns of the patient/family and nursing staff; serving as a moral agent in identifying and helping to resolve ethical and clinical concerns within and outside the clinical setting	Advocacy and moral agency
3	Registered nurse–led; works on behalf of patient and family; ethical decisions may deviate from rules		
5	Paramedic-led; works on behalf of patient; makes ethical decisions based on rules		
1	Advanced practice nurse–led; develops or creatively modifies educational opportunities and integrates into the delivery of care; assesses patient’s understanding and individualizes to optimize educational opportunities; anticipates and plans for posttransport educational needs	The ability to facilitate learning for patients/families, nursing staff, other members of the health care team and community; includes both formal and informal facilitation of learning	Facilitation of learning
3	Registered nurse–led; integrates patient/family education into the provision of care; assesses patient’s understanding and readiness to learn		

Rating	Triage tool adaptation	AACN definition	Nurse characteristic
5	Paramedic-led; keeps patient/family informed of plan and progression of transport; sees care and education as separate entities		

Abbreviations: AACN, American Association of Critical-Care Nurses; AKI, acute kidney injury; cath lab, catheterization laboratory; CRF, chronic renal failure; CVA, cerebrovascular accident; EBP, evidence-based practice; ED, emergency department; HF, heart failure; ICH, intracranial hemorrhage; IDDM, insulin-dependent diabetes mellitus; LV, left ventricle; MI, myocardial infarction; MODS, multiple organ dysfunction syndrome; N/A, not applicable; NYHA, New York Heart Association; OR, operating room; s/p, status post; vent, ventilator.



**Table 3**

Exemplar 1 of a completed transport triage tool

Characteristic	Level assigned <sup>a</sup>	Explanation
Resiliency	1	Cardiac status has no reserves left, as evidenced by ejection fraction of 10%, intermittent ventricular tachycardia. Also has numerous chronic comorbid conditions.
Vulnerability	1	This patient is highly vulnerable. Interruption in intravenous vasopressor support or antiarrhythmic would place in serious jeopardy. Fluid status is tenuous because of low ejection fraction.
Stability	1	Very unstable and unresponsive to therapies as evidenced by worsening condition despite standard therapy.
Complexity	1	Several systems currently involved, with potential for further system involvement owing to hypotension.
Resource availability	1	Current available resources at the referring facility are unable to meet the patient's needs. Although it is unclear at this stage whether the resources at the tertiary facility, such as a transplant evaluation, will change the course of the disease, it is clear that current resources are exhausted.
Participation in care	3	The patient's ability to participate in care is significantly affected by the effects of the NYHA class 3 heart failure, but family members are present and participate in care where possible.
Participation in decision making	5	The patient is fully alert and actively participates in decision making.
Predictability	1	This patient has a low level of predictability owing to the hemodynamic instability and intermittent ventricular tachycardia despite intravenous administration of an antiarrhythmic agent.

<sup>a</sup>Key: 1, The characteristic is present in low amounts, or not present at all; 3, the characteristic is present in moderate amounts, or to a moderate degree; 5, the characteristic is strong, or present to a great degree.

**Table 4**

Exemplar 2 of a completed transport triage tool

Characteristic	Level assigned <sup>a</sup>	Explanation
Resiliency	3	An aspiration resulted in brief hypoxia, but oxygenation was quickly restored with intubation and positive pressure ventilation.
Vulnerability	3	She now has an artificial airway and sedation making her more vulnerable.
Stability	3	Hemodynamic status is currently satisfactory, but the cause of her original instability was unable to be corrected, and she continues to bleed.
Complexity	3	She has 2 systems involved in separate problems. Each problem is limited to its respective system.
Resource availability	5	Since receiving packed red blood cells, she has good hemodynamics. The bleeding has not been fixed, however, and this resource (blood) continues to be lost. The referring facility has the resources to treat the current problem, so she is not in increasing danger.
Participation in care	1	She is currently intubated and sedated, thus unable to provide any care for herself. Family members are supportive but are also unable to provide care.
Participation in decision making	3	The patient cannot participate in decision making, but the family has stepped in and made treatment requests on her behalf (transfer).
Predictability	5	This patient's transport trajectory is fairly predictable. The bleeding source has been found, although not repaired, and packed red blood cell infusion provided sufficient stabilization. Her current respiratory status is stable with no reasonably expected complications.

<sup>a</sup>Key: 1, The characteristic is present in low amounts, or not present at all; 3, the characteristic is present in moderate amounts, or to a moderate degree; 5, the characteristic is strong, or present to a great degree.