

Goals of care are rarely discussed prior to potentially futile trauma transfer: Is it okay to say “No”?

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AUTHORS/CONTRIBUTORS

Nellie Trenga-Schein, David Zonies, and Mackenzie Cook have nothing to disclose.

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BACKGROUND:	It is unknown how often the physician-to-physician trauma transfer conversation includes a discussion of patient goals of care (GOC). We hypothesized that physicians would rarely discuss GOC on transfer calls when faced with patients with catastrophic injuries.
METHODS:	We completed a retrospective case series of trauma patients transferred to an ACS-verified Level I trauma center between 2018 and 2022 who died or were discharged to hospice without surgical intervention within 48 hours. Transfer call recordings were analyzed for GOC conversations.
RESULTS:	A total of 5,562 patients were accepted as transfers and 82 (1.5%) met inclusion criteria. Eighty of the 82 patients had recorded transfer calls and were analyzed. The most common transfer reason was traumatic brain injury (TBI) and need for neurosurgical capabilities (53%) followed by complex multisystem trauma (23%). There was explicit discussion of code status prior to transfer in 20% and a more in depth GOC conversation for 10% of patients. Appropriateness of transfer was discussed in 21% and at least one physician expressed explicit concerns of futility for 14%, though all were subsequently transferred. Code status was changed immediately upon arrival for 15% for patients and 19% of patients transferred for neurosurgical expertise were deemed to have non-survivable injuries based on imaging and examination that were unchanged from the referring hospital.
CONCLUSION:	Among a group of profoundly injured trauma patients at high risk of death, an explicit discussion of GOC occurred in just 10%. This suggests that even when the catastrophic nature of patient injury is understood, transfers still occur, and patients and their families are subjected to an expensive, disruptive, and displacing experience with little to no anticipated benefit. A discussion of GOC and therapeutic objectives should be considered in all severely injured trauma patients prior to transfer. (<i>J Trauma Acute Care Surg.</i> 2024;96: 583–588. Copyright © 2023 American Association for the Surgery of Trauma.)
LEVEL OF EVIDENCE:	Therapeutic/Care Management; Level IV.
KEY WORDS:	Palliative care; trauma transfer; goals of care.

Interfacility trauma transfers are a key component in delivering equitable, high quality trauma care. Resource-intensive transfers for definitive care have become routine due to evidence of improved morbidity and mortality for severely injured patients treated in trauma centers.^{1,2} Trauma patients with potentially non-survivable injuries may be transferred only to die hundreds of miles away from their communities at great emotional and financial cost.³

Futile trauma transfers (FTT) are a subset of secondary overtriage and previously shown to account for 1.1% to 2.5% of all trauma transfers.^{3–5} Defined as trauma patients who are transferred and die or are discharged to hospice without surgical or radiographic intervention (other than confirmatory imaging) within 48 hours of arrival, the financial and emotional burden of FTT can be very significant and could potentially be avoided.^{3,5} Follette et al.³ calculated an average cost of \$56,396 per FTT and this does not account for the emotional cost on patients and their families. A FTT may prolong suffering, undermine realistic discussions about end-of-life care, and hinder the opportunity for patients to spend their remaining time surrounded by loved ones. Furthermore, these transfers use limited bed space in an increasingly stressed healthcare system.

Despite strong recommendations to incorporate goals of care (GOC) conversations early into the care of critically ill and injured adults, prior work has shown underutilization and no research has been done on GOC discussions incorporated

into the decision to enact a potentially FTT.^{6–11} With this in mind, we sought to determine how frequently the physician-to-physician transfer conversation included discussion of GOC in potentially FTT. We hypothesized that physicians would rarely discuss GOC on transfer calls when faced with patients with catastrophic injuries and a potentially FTT.

METHODS

We completed a retrospective case series of trauma patients transferred to a single ACS-verified Level I adult and pediatric trauma center, between April 2018 and April 2022. This was reviewed and approved by our local Institutional Review Board (study 00017512) and the requirement for informed consent was waived. Transfer records were obtained through our institutional trauma registry and recordings of transfer center calls reviewed.

Inclusion criteria for this study were defined as patients who were transferred and died or were discharged to hospice within 48 hours of arrival. We included patients who received additional imaging after transfer that could have been obtained at the referring hospital but was not at the time of transfer due to logistical and timing limitations. We also included patients who were immediately brought to the operating room upon arrival, but died or were deemed to have non-survivable injuries during initial operative efforts or were transitioned to comfort focused care immediately after the procedure.

This is an expansion upon previously described FTT criteria, which have been defined as patients who die or are discharged to hospice without surgical or radiographic intervention, other than confirmatory imaging, within 48 hours of arrival.^{3,5} We expanded our inclusion criteria for this study to capture patients who did not meet this previous retrospective definition of futility but were clearly at extremely high risk of mortality at the time of transfer. This was done as presumably these patients were the ones where a pre-transfer GOC discussion would be most likely to occur.

For these patients, transfer call recordings were obtained through our institutional transfer center (Fig. 1). The recordings were analyzed for the content of the physician-to-physician

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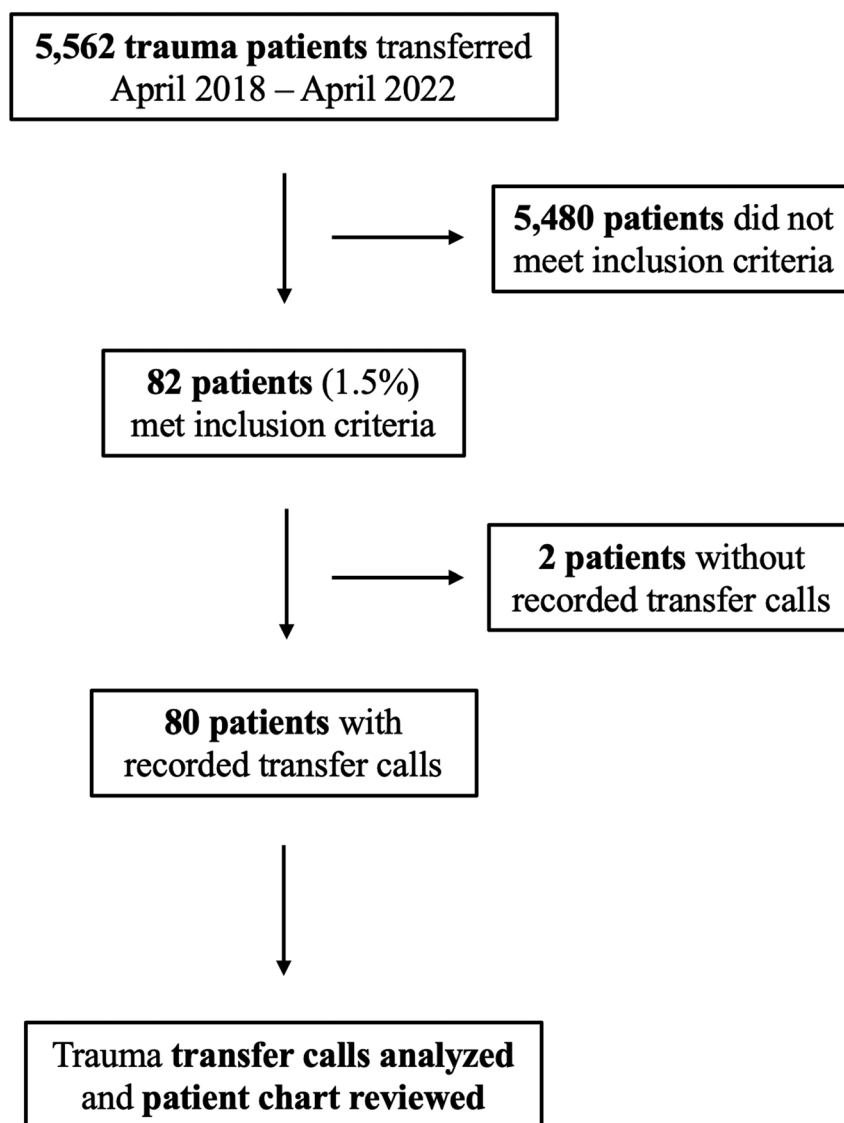


Figure 1. Evaluation of trauma transfers for inclusion criteria as FTT. FTT were defined as death or discharge to hospice within 48 hours of arrival without significant surgical or new radiographic intervention.

discussion including primary reason for transfer request, discussion of code status, request for and/or discussion of GOC prior to transfer, discussion surrounding the appropriateness of transfer, and expression of perceived futility. In our ACS-verified Level I center, transfer calls primarily occurred between a referring emergency medicine physician and our receiving emergency medicine physician, with engagement of consulting services as appropriate. Retrospective chart analysis was conducted to supplement understanding of patient course and medical decision making prior to and after transfer. The primary outcome of interest is the frequency of GOC discussion prior to transfer. A positive GOC discussion required confirming the patient's code status as well as verifying that potential interventions offered at the receiving hospital aligned with the patient and/or medical decision maker's wishes.

Patient demographics (including age and sex), Injury Severity Score (ISS), and primary reason for transfer, according

to the referring provider, were collected. We conducted univariate analysis using a Mann-Whitney *U*, Fischer's exact test, or one-way ANOVA as appropriate. This case series has been reported in line with the PROCESS Guidelines (Supplemental Digital Content 1, <http://links.lww.com/TA/D419>).¹²

RESULTS

A total of 5,562 patients were accepted as trauma transfers between April 2018 and April 2022. Of these, 82 (1.5%) met our inclusion criteria. Eighty of the 82 patients had recorded transfer center calls. All 80 of these cases underwent peer review as part of routine trauma quality improvement process and only one case was thought to be an unexpected mortality with an opportunity for improvement; however, this patient was enrolled in hospice prior to their injury with a pre-existing DNR/DNI order. Six of the 80 were pediatric transfers and patient ages ranged from

4 months to 96 years with a median age of 70 years (interquartile range [IQR], 56–80 years). The majority (67.5%) of patients were male. Injury Severity Score ranged from 1 to 75 with a median of 26 (IQR 10–30).

The most common transfer indication was traumatic brain injury (TBI) and need for neurosurgical expertise (52.5%) followed by complex multisystem trauma (23%). Appropriateness of transfer was discussed for 17 of 80 patients (21%) and during these discussions at least one physician expressed explicit concerns of futility in 11/80 patients (14%). Regardless, all 11 of these patients were subsequently transferred. Four of these 11 patients were unidentified at the time of transfer. One patient was in the process of being loaded into a Life Flight helicopter at the time of the transfer call, another was transferred specifically for consideration for organ donation but was without any documentation of status as an organ donor at the time of transfer, and another was transferred because “the family wanted everything done.”

Explicit discussion of code status occurred prior to transfer for 16 of the 80 patients (20%). A greater in-depth GOC conversation happened for just 10% (8/80) patients. When comparing the demographics of the patients who received a GOC conversation prior to transfer, age was significantly associated ($p < 0.01$). There were no other significant associations of predictive factors for a pre-transfer GOC conversation (Table 1). Some observed patient characteristics among the eight for whom a GOC conversation was initiated prior to transfer were complex or significant pre-existing comorbidities such as metastatic cancer or cardiac conditions in 87.5% (7 of 8) and documented DNR/DNI status in 50% (4 of 8) patients. While difficult to quantify, the impression of the authors was that the occurrence of code status or GOC discussion reflected individual provider practice as certain

providers often asked for or offered this information, while others never did. For the eight calls that included an in-depth GOC conversation, five had a physician from a consulting service such as trauma or neurosurgery on the phone prior to accepting the transfer and it was often the consulting physician who initiated the discussion.

Code status was changed immediately upon arrival to the trauma bay for 15% of patients (12/80) patients, half of whom (6/12) had a documented GOC conversation in the trauma bay that led to this change. Thirty-three percent (4/12) were deemed medically futile upon arrival and two of the 12 patients were found to have a previously documented DNR/DNI code status that was not mentioned prior to transfer.

When specifically considering patients transferred for neurosurgical expertise, 19% (8/42) were deemed to have nonsurvivable injuries based on the imaging from the referring facility and a poor neurological examination. Importantly, for none of these patients did the neurological examination obtained upon arrival differ significantly from the neurological examination obtained at the referring hospital prior to transfer. None of these patients had new imaging modalities (repeat imaging only) and they received no surgical interventions.

DISCUSSION

We present the first analysis of transfer center calls focused on profoundly injured trauma patients, all of whom died or discharged to hospice within 48 hours of transfer. In this group of critically injured patients, an explicit discussion of GOC and appropriateness of transfer occurred just 10% of the time. Furthermore, 25 patients were deemed to have nonsurvivable injuries from imaging that was obtained at the referring hospital,

TABLE 1. Patient Characteristics: GOC Discussion and No GOC Discussion

Characteristics	GOC Discussion (n = 8)	No GOC Discussion (n = 72)	p
Demographics			
Age, mean (SD)	81.3 (10.8)	60.9 (24.6)	<0.01*
Sex (male), n (%)	4.0 (50.0)	50.0 (69.4)	0.43
Intake vitals			
GCS, median (IQR)	3.0 (3.0–10.5)	3.0 (3.0–10), n = 68	0.65
SBP, median (IQR)	127.0 (107.3–150.0)	128.0 (103.0–145.0), n = 70	0.85
Pulse, median (IQR)	81.0 (68.3–106.0)	97.0 (76.0–111.3), n = 71	0.18
Primary transfer reason			0.91
Neurosurgical expertise, n (%)	5.0 (62.5)	37.0 (52.9)	
Multisystem trauma, n (%)	1.0 (12.5)	14.0 (19.4)	
Hemorrhagic shock, n (%)	0	1.0 (1.4)	
Cardiac arrest, n (%)	1.0 (12.5)	1.0 (1.4)	
GSW, n (%)	0	3.0 (4.2)	
Orthopedics, n (%)	0	4.0 (5.6)	
Higher level of care, n (%)	0	9.0 (12.5)	
Splenic injury, n (%)	1.0 (12.5)	0	
hypothermia, n (%)	0	3.0 (4.2)	
ISS			
ISS, median (IQR)	25.0 (12.5–26.0)	26.0 (10.0–30.0)	0.59

Table of patient characteristics for transfers with and without GOC discussions prior to transfer.

*Statistically significant.

SD, standard deviation; GCS, Glasgow Coma Scale; SBP, systolic blood pressure; GSW, gunshot wound.

had futility expressed during the physician-to-physician transfer call, and/or had their code status changed immediately upon arrival to the trauma bay at our institution. These data suggest that even when the catastrophic nature of patient injury is understood, GOC discussions do not routinely happen, transfers still occur, and patients and their families are subjected to an expensive, disruptive, and displacing experience with little to no anticipated benefit. In 2020 the Critical Care Committee of the AAST ranked addressing GOC in the acute care setting as the number one research priority in surgical critical care, and these data help highlight how far we need to go to meet that priority.¹¹

In this study, we expanded our patient inclusion criteria beyond previously published definitions of FTT as our objective was to evaluate the occurrence of GOC discussion among transfer patients with very high suspected mortality. This is the group whom we predict to have the highest incidence of GOC discussions prior to transfer, a prediction supported by parallel literature.¹³ This definition was critical to include patients who would previously be excluded from the definition of futility including individuals such as those who arrived receiving CPR and were taken to the operating room in extremis only to die or have efforts deemed futile minutes later. We expanded our consideration of futility to take into consideration the nuances of real-world care.

The American College of Surgeons TQIP guidelines on integration of palliative care into the care of injured patients recommend an initial palliative assessment within 24 hours of admission, a goal many programs are moving toward meeting.^{10,13} Extending this recommendation, as well as one by the Society of Critical Care Medicine, to the transfer setting suggests that a discussion of GOC and therapeutic objectives should be considered in all severely injured trauma patients prior to transfer.⁹ This reframing should be balanced with the with traditional teaching from Advanced Trauma Life Support that has focused on the rapid and efficient transfer of critically injured patients from Level III and Level IV trauma centers to Level I and Level II trauma centers. While it is unthinkable to many to definitively say “no” to a request for trauma transfer, the “never-say-no” mentality surrounding transfers does warrant reconsideration. We recommend taking the time to obtain the necessary information to ensure that transfer aligns with a patient’s GOC and will provide treatment options otherwise not available. If not, consider asking “how can we support you in caring for [the patient] closer to home?” By using this mentality, we can work to avoid transfers that potentially are inconsistent with a patient’s wishes or are unlikely to change their outcomes without isolating referring hospitals, violating legal requirements, or compromising our ethical core.

It may also be time to use tools to prospectively identify patients at risk for potential FTT. While injury severity likely plays into physician discussion about potential FTT, the ISS is rarely (if ever) calculated at the time a transfer is requested and is primarily a retrospective research tool.⁵ In addition, our study showed that this number was not a significant predictor of transfer call GOC conversations and thus unlikely to be helpful in the moment of decision making. There are published tools, such as the MGAP (mechanism of injury, Glasgow coma scale, age, systolic blood pressure) scoring system, for enhanced recognition of injury patterns associated with high risk of futility in transfer. The MGAP score has recently been highlighted as a potentially effective tool.^{5,14} It could be considered as an adjunct to

physician-to-physician discussion to prompt a GOC discussion prior to accepting trauma transfers. Our data also emphasizes the potential for increased utilization of telemedicine for expert consultation. Specifically, for patients transferred for neurosurgical expertise 8 of the 42 patients were deemed to have nonsurvivable injuries based on their imaging and examinations from the referring hospital. This prognostication was determined after acceptance of the patients, but by using telemedicine and including a neurosurgeon in the transfer conversation this readily available information could have been accessed prior to accepting the transfers.

We acknowledge several potential limitations of this study. First, we were unable to obtain the transfer calls from any patients who requested a transfer and were refused. Similarly, there is no way of identifying any patients for whom a transfer request was never placed due to the occurrence of a GOC discussion at the referring hospital. However, based on anecdotal experience, the occurrence of these scenarios is thought to be extremely low. Second, we are using the assumption that patients who meet our definition of FTT are the most catastrophically injured and therefore the most likely to have a GOC conversation prior to transfer and extrapolating this to infer a similarly low occurrence of GOC conversations prior to transfer of all trauma patients. This assumption and the rate of GOC conversations prior to all trauma transfers should be further evaluated in future studies. Hopefully, with the inclusion of palliative care in Advanced Trauma Life Support 11, the occurrence of GOC conversations in the acute care setting will become routine.

There are ample directions to expand on this work and further enhance our optimization of trauma transfers to reduce the burden of futility. This includes working to better understand the referring physician perspective by conducting semi-structured interviews with physicians at Level III and Level IV trauma centers. To create change in the trauma transfer process we must consider both sides of the equation and better understand referring physician experiences surrounding trauma transfers. It is not sufficient for an accepting physician just to say “no” without assuring that the nursing support, physician expertise, institutional resources, and patient desire are present to assure high quality end of life care at the referring hospital. Expanding the ability to project palliative care skills outside of large centers with the use of telemedicine and education will enhance opportunities for robust GOC conversations.^{4,15–18} Lastly, we know that trauma transfer patterns and policies vary regionally and that GOC practices reflect the culture of an institution. This is why we propose a multi-center study as a future step in this work.

Identifying patients at risk for a potentially FTT necessitates a nuanced approach, involving thorough assessment of clinical factors, prognostic indicators, and shared decision-making. The transfer call is an opportunity to comprehensively evaluate the potential benefits, burdens, and expected outcomes of medical interventions in light of individual patient characteristics and values. Data presented here demonstrate for the first time that we are falling short of that mark, and we must do better.

AUTHORSHIP

N.T.-S. participated in the literature search, study design, data collection, data analysis, data interpretation, writing, critical revision. D.Z. participated in the literature search, study design, data interpretation, critical revision. M.C. participated in the literature search, study design, data collection, data analysis, data interpretation, writing, critical revision.

DISCLOSURE

Conflicts of Interest: Author Disclosure forms have been supplied and are provided as Supplemental Digital Content (<http://links.lww.com/TA/D420>).

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