Surgeon Communication and Family Understanding of Patient Prognosis in Critically Ill Surgical Patients: A Qualitative Investigation Informs Resident Training

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PURPOSE: Surgeons treating critically ill patients must work with family members making medical decisions for the patient. These surrogate decision makers depend on providers' high-quality communication and empathy to facilitate medical decisions. There is growing evidence of poor quality of communication and delayed family engagement in the intensive care unit, and of a decline in empathy over the course of a surgeon's clinical training. The aims of this study were to: (1) describe family understanding of patient prognosis among those admitted to our Trauma Intensive Care Unit (TICU), compared to the surgeon's assessment, and identify factors influencing the congruity of family-surgeon understanding ("congruence"); (2) characterize resident mentoring regarding difficult healthcare discussions and suggest adaptations to our communication program to address identified performance gaps.

SETTING: Level I TICU in an independent academic medical center.

METHODS: A qualitative research approach was valuable to discern the complexities of family understanding during highly stressful conditions. We enrolled adult family members of TICU patients, life expectancy <1 year, per attending. Using in-depth interviews we explored the family's experience with providers and the hospital system, and factors influencing understanding of the patient condition and decision making. We interviewed the surgical attending and/or resident separately to ascertain their perspective of the patient's condition and their experience with the family, as well as communication style, training, and influences on their approach. Interviews were audiotaped and transcribed. Using the systematic, multistep, rigorous coding process of grounded theory, we identified a range of experiences and common themes, and developed theories and hypotheses regarding factors influencing our outcomes of interest.

RESULTS: We enrolled, coded, and analyzed 31 interviews from 16 cases; the data painted a broad description of a complex situation. We developed a conceptual model of our hypothesized factors influencing congruence (Figure). Our data suggest that congruence varies widely, and is influenced by family-surgeon engagement quality, information accessed from other hospital and personal sources, and, significantly, hospital system factors. Family-surgeon engagement quality is influenced by family and physician factors, case complexity, and myriad hospital factors. Both "physician factors" and "family factors" include previous experience, personal history, and beliefs, as well as dynamic factors such as current experiences and stress level. We identify several opportunities to improve congruence by adapting our resident communication training program: providing practice assessing family knowledge, expectations, and current understanding of information shared, and focusing on building trust.

CONCLUSIONS: Surgical residents receive formal communication training and focused mentoring to gain important skills; however, family members' understanding of their loved one's critical condition is influenced

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by myriad hospital system factors beyond case complexity and surgeon communication skills. (J Surg Ed 76: e77−e91. © 2019 Association of Program Directors in Surgery. Published by Elsevier Inc. All rights reserved.)

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COMPETENCIES: Patient Care, Professionalism, Interpersonal and Communication Skills

BACKGROUND

In the current healthcare culture in the United States, we value patient autonomy and honesty between the patient and their physician. In contrast to our historical practice up to and through the 1960s, we now commonly discuss a patient's diagnosis with them, as well as multiple treatment options.[1] We acknowledge and support the patient's right to make decisions about their own health care. Resident assessment is now required by the ACGME to include communication and interpersonal competencies.[2] Resident communication skills training often includes discussing difficult topics and communicating bad news.[3] One area, however, remains problematic: the communication of a patient's terminal prognosis.

Multiple studies have concluded that patients with terminal diseases often have very limited knowledge of their prognosis.[4-6] Physicians frequently avoid discussing negative outcomes, timelines, or statistics and may use vague terms that patients do not understand, such as the difference between "treat" and "cure." We wait for patients to ask about their prognosis, or even wait for them to come to understand it on their own. We focus on treatments without being clear about the anticipated outcome. One research study found that 80% of stage IV cancer patients believe that surgery will cure their disease.[6] Another study of patients not expected to live for a full year demonstrated that 21% believed themselves to be "relatively healthy" and 56% "seriously but not terminally ill."[4]

Patients who understand their terminal prognosis have been found to have higher satisfaction with their care, their physician's communication, and their end-of-life decision-making.[5] They are more likely to discuss Do Not Resuscitate status and palliative care, and they enter hospice sooner. They choose fewer aggressive treatment options. Their caregivers also have a higher satisfaction with the health care provided. The repercussions of better communication within this topic could be far-reaching as the future of medicine becomes more expensive and litigious.

When residents' mentors lack the skills necessary to communicate a patient's terminal prognosis, it is unlikely they will be able to obtain more successful skills in an apprenticeship model of training. Training programs have demonstrated that communication between residents and patients can be improved with guided curricula,[7] but this requires better collective knowledge of factors facilitating successful communication. Furthermore, identifying a set of communication tools to aid communication practice would better equip the next generations of physicians to skillfully communicate the difficult area of terminal prognosis.

Most research regarding communicating poor prognosis concerns cancer patients. Almost no studies investigate the topic from a surgical perspective, though surgeons frequently work with patients with terminal diseases or life threatening injuries at high risk of adverse outcomes. This study seeks to identify how critical care surgeons are communicating poor prognosis with their families in a large trauma intensive care unit. We aim to identify barriers to clear communication of this topic and, importantly, factors that facilitate family understanding of the prognosis. By identifying aspects of communication that both help and hinder the understanding between physicians and families, we can better train residents to become more successful in the future.

METHODS

We chose a qualitative research approach to allow us to discern the complexities of family understanding during highly stressful conditions, provider perspective of the patient's condition, and the quality of family-surgeon engagement. This Institutional Review Board-approved study was funded by an Inova Seed Grant, and conducted at Inova Fairfax Medical Campus. We enrolled purposeful sample of adult English-speaking family members of eligible patients, self-identifying as a "primary caregiver" or "close family member." Family members were eligible if their loved one was admitted to the trauma intensive care unit (TICU) for $\geq$24 hours and had a life expectancy $<$1 year, per the attending. We chose these criteria, anticipating that families would have had a chance to meet with a surgeon, and that known factors influencing families' understanding, such as stress, anxiety, sleep deprivation, and involvement of multiple providers, would be present. Upon completion of the family interview, we invited the patient's attending or resident to participate; provider interviews were completed within 3 days of the family interview.

Using in-depth semi-structured interviews lasting between 15 and 30 minutes, we explored the family and provider experience and perspective. Families were asked to share their understanding of the patient's condition and prognosis, experiences with providers and the hospital system, and factors influencing their understanding. Surgeon participants shared their assessment of the patient's condition, recounted their communication with the family, and provided background on their communication style and training (Appendix A, Interview Guides). After 10 interviews, the researchers noted no new factors influencing family understanding emerging in the data; however, we had not reached data saturation regarding physician style, practice, perspective, beliefs and influences.[8] We enrolled 6 more cases and captured a wider range of surgeon factors influencing our outcome of interest. Interviews were conducted by AN, a qualitative researcher and clinical trauma social worker; AN trained and supervised 2 other researcher team members as interviewers. Interviews were audiotaped and transcribed by a professional transcription company, and field notes were generated after each interview.

Two team members (AN, HN) created a codebook following initial data review based on categories of questions in the interview guide and used this to code each transcript. Following the hand-coding and note-taking process, "Microsoft Word" was used to organize all data; memos and notes were filed with the quotes informing the codes and themes. AN reviewed the coded data for discrepancies, which were addressed through negotiated consensus by all team members.[9] Themes were refined iteratively and collectively. Coding fragments relevant to each theme were extracted from individual transcripts and compiled into a new dataset. This was analyzed for consistency, clarity, and recoding by all team members.[10] Using this systematic, multistep, rigorous coding process of grounded theory, we identified a range of experiences and common themes, and developed theories and hypotheses regarding influences on family-provider understanding congruence and their interconnection. We created a conceptual model depicting our hypothesized pathways of influence of factors identified in the data (Fig. 1).

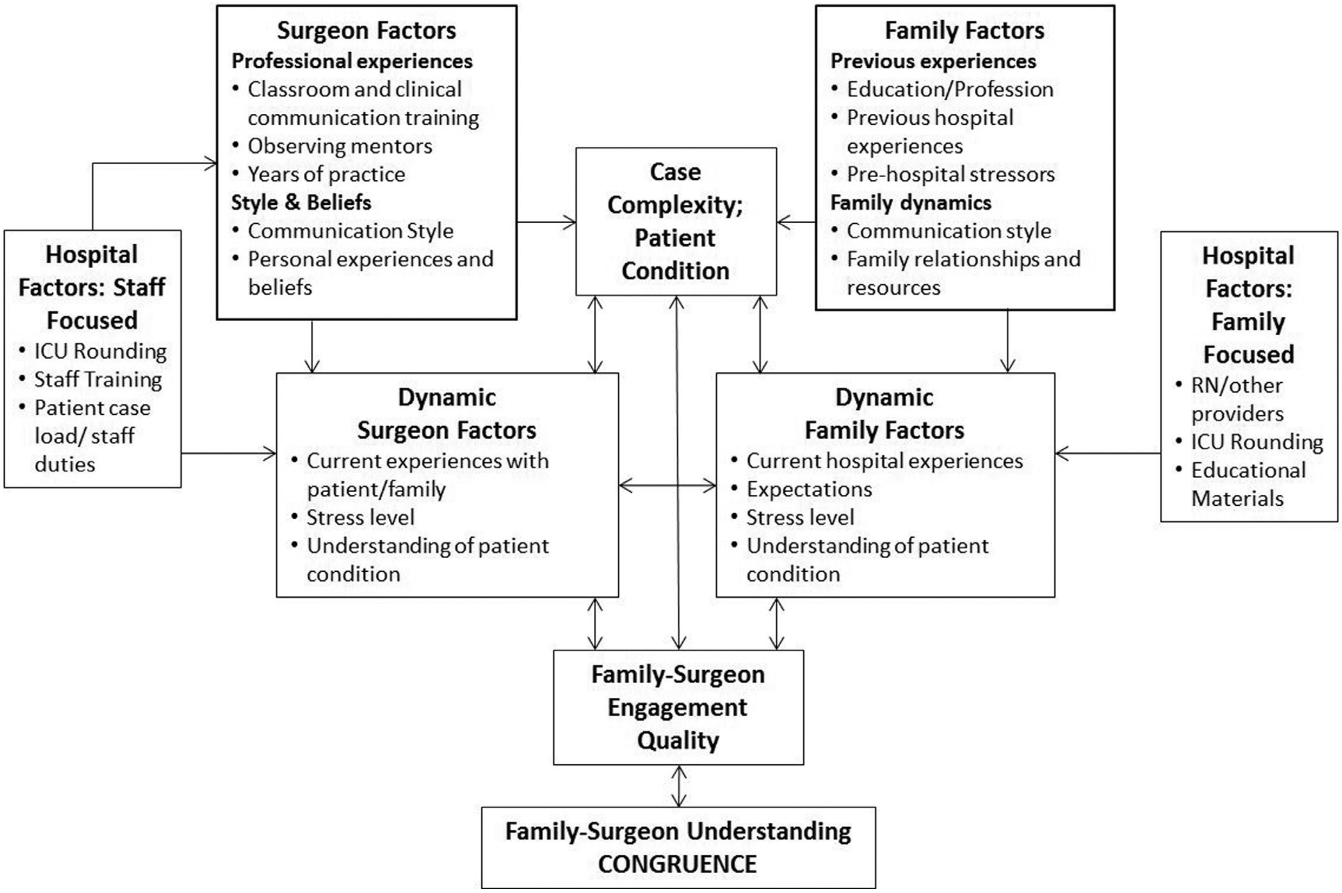

FIGURE 1. Conceptual model of factors influencing congruence of family-surgeon understanding of patient condition in critically ill surgical patients. *Description*: Graphic model/flow chart depicting factors affecting surgeon and family communication, including the relationship between factors.

RESULTS

We enrolled, coded, and analyzed 31 interviews from 16 cases. Subjects included family members of patients admitted between 2 and 23 days, as a result of falls and traumatic brain injury (TBI), motor vehicle crashes and multi trauma, abdominal and cancer surgery. Patients ranged in age from 21 to 97 years; family members included siblings, adult children, spouses, parents, and an aunt. To enroll the 16 cases, we approached 19 family members; 3 declined to participate due to scheduling challenges. Of the 16 cases enrolled, surgeons were unavailable for interview in 3 cases; those interviewed included 4 residents ranging from PGY2-4, and 6 different attendings with 8 to 30 years' experience (Table 1).

Our analysis suggests that congruence varies widely. Table 2 displays examples of this range, from cases where provider and family describe the patient's condition and expected outcome using similar language, to those in which provider-family descriptions of possible outcomes differ significantly. Themes of factors influencing family-surgeon congruence of understanding fell into 2 arms: those preceding the patient's admission, and those shaping congruence during the patient's admission. We grouped pre-admission factors into 3 categories: (1) surgeon professional and personal experiences, communication style, and beliefs, (2) family previous experiences and dynamics, and (3) hospital factors and processes. Post-admission factors fell into 3 categories: (1) case complexity, (2) dynamic surgeon and patient experiences, and (3) family-surgeon engagement quality. We organized these factors and their relationships into a conceptual model (Fig. 1). We report briefly on all categories of data, then highlight those factors we believe mutable.

Pre-Engagement Factors

Surgeon Experiences, Style, Beliefs (Table 3)
Surgeons identified several sources of influence on their beliefs, communication style, and practice, including formal training, mentors, and practice experiences. They also noted the significant influence of their own family culture and values, personal history, personality traits, and general comfort with discussing end of life topics. While daily communication practice varied according to external factors such as caseload and staffing, surgeons described tendencies along a spectrum between empathic patient-centered practice to a more straightforward, directive, physician-centered approach.

Formal training affected surgeons' communication approach. Resident #14 explained that her medical school was, "really proactive about trying to get us to be good communicators," and that the continued practice with actors in residency has benefitted her: "the more you do it, the better you'll get at it." Those describing an emphasis on and appreciation for EOL discussion skills practice in training also reveal a patient-centered approach, emphasizing the human aspects of the patient experience in their storytelling. In contrast, one favoring a more paternalistic communication approach described residency as an important time to hone technical skills but not to engage in EOL discussions, noting, "I'm not so sure that it's in [a resident's] scope of practice to talk to [families] about the actual death... You don't want ...a resident to confound any information." This attending

TABLE 1. Summary of Enrolled Cases

Case	Family Subject	Pt	LOS (days)	Reason for Admission	Comorbidities and Past Medical History	Surgeon Interviewed
1	Wife	89M	4	Fall in home; TBI	Dementia, kidney disease	Attending
2	Dtr, SIL	80F	2	Bowel obstruction	CVA, CA	Attending
3	Son, Wife	76M	4	Fall in parking lot; TBI	No significant history	Attendings (2)
4	Son, Dtr	76F	2	Fall in home; TBI	Lung CA, neuro decline	Declined
5	Daughter	65M	8	Fall from ladder; TBI	No significant history	Attending
6	Son, DIL	97F	5	Fall in home; TBI	Delirium	Attending
7	Daughter	80F	1	Fall at nursing home; TBI	Dementia, DM	Resident
8	Husband	55F	3	Gastric perforation; sepsis	Renal transplant	Resident
9	Daughter	62F	5	Perineal wound	Brain/lung CA	Attending
10	Daughter	70M	6	Fall in restaurant; TBI	Delirium	Attending
11	Son, Dtr	72F	3	CVA/fall downstairs; TBI	No significant history	Resident
12	Husband	69F	23	Fall in home; TBI	Parkinson's, PE	Resident
13	Son	31M	3	Fall off treadmill; TBI	No significant history	Attending
14	Wife	54M	13	MCC; TBI/multi trauma	No significant history	Resident
15	Mo, Fa	23M	4	MCC; TBI/multi trauma	No significant history	Declined
16	Mother	21M	15	MVC; TBI/multi trauma	No significant history	Declined

Abbreviations: CA, cancer; CVA, cerebrovascular accident; Dtr, daughter; DIL, daughter in law; DM, diabetes mellitus; Fa, father; F, female; LOS, length of stay at time of interview; Mo, mother; M, male; MCC, motor cycle crash; MVC, motor vehicle crash; Pt, patient; SIL, son in law; TBI, traumatic brain injury.

TABLE 2. Examples of Range of Family-Surgeon Congruence

Case	Surgeon Description	Family Description
	High congruence	
3	I focused on the main determinant of outcome, which is his brain injury, and I made it clear that it's a severe brain injury and that in the best-case scenario that he would probably be in a nursing home at least for some period in time with a significant neurological deficit.	And she described what really went on inside the brain which was very helpful for somebody like me . . . I had asked her to give it to me straight. She described that there looked like there had been a lot of damage to the brain, long term it's likely we'll need to make choices about his care.
5	I think said, "Sometimes people can wake up from this but it's also possible that he might not wake up from this and be able to be functional. We just don't know until we kind of try to stop the medicine and let him wake up and see what he can do."	I understand with a traumatic brain injury, you don't really know when they're going to wake up. But with the medications that he's on, if you take little by little off to see when they're going to wake up, then I guess that's when they'll wake up.
	I sensed [that] she knew this is bad and... she kind of had a clear understanding of what kind of lifestyle he would be acceptable to because she definitely mentioned like when I said about possibly being paralyzed she's like, "Oh no he's very active. If he wasn't active he wouldn't want any of this.".	I would like my dad to go back to the way he was, but I know it's— that's not possible. . . His left side might be paralyzed... but my dad wouldn't want to live like that, to be paralyzed on his one side, because he's so independent. So my brother and I discussed what should we do? So it's been a lot of talk with my brother and I.
	Low congruence	
2	I told them. . . she [has] limited outcome potential. I don't know if she'll ever make it home. . . I don't know if she'll live through this.	[From field notes] We hope she can return home to do what she was before earlier this year when she was able to travel and get around by herself.
11	The *older son* was declining any bolts or any further invasive procedures, because he knew the poor prognosis from a neurologic standpoint. . . she would not want to live as a vegetable, [or] have these interventions. [They chose] no escalation of care, simply the minimal life sustaining measure	[Youngest son]: He told us what the state of my mom was. . . the things they think they would do, because they would make a difference. They said that they're keeping her stable. . . I'm full of hope. I know my mom's going to walk out of here. It's not too late. She's here and it could work. She could come back.

notices that family members appreciate a straightforward, honest, and directive style.

Mentors, both formal and informal, further shape the surgeon's style and beliefs. Surgeons note, "With every attending, you learn a little bit and take a little of their style," and, "You pick up little things, just like in surgery . . . [and then] you choose which way that you think is best." Resident #8 described his family doctor as "very invested in all of his patients" and significantly influential in his own approach. Not surprisingly, family members described this resident in very similar terms, noting that he "gives you the impression that you are all he is thinking about at that moment."

A surgeon's personal history, belief system, and approach to learning were associated with their unique practice style. Surgeons describing a lifelong learning curve and interest in mentoring note an evolution in their approach to family communication. Attending #3 described significant maturing in his practice over the last 20 years, crediting family feedback with the most impact, explaining, "It is much easier for me now. . . the family may be hostile, but. . . I'm more insightful as far as the calamity that they're going through." This surgeon, as well as several others identified by their patients as compassionate and trustworthy, reflected on the influence of a family history of medical challenge and loss. In this physician's experience, "a majority of patients' families do understand [the severity of the patient's situation]." Another surgeon describes limited personal experience of loss: "[Your practice is likely influenced by] your own personal experiences - I mean, luckily I haven't had experiences first-hand," and felt his practice had not shifted much over time, noting, "I think it's worked for me." His experience leads him to anticipate a family's limited capacity to understand and participate in EOL decisions, and informs his directive approach.

Family Experiences and Communication Style (Table 4)

Many family members reflected on previous experiences with the healthcare system as influencing current expectations are. Prior knowledge of hospital processes encouraged some to engage providers early regarding discharge planning, as with Daughter #6: "I'm aware that when you have someone as sick as she is, you need to prepare for their coming home." Met or unmet expectations influenced current experience: Daughter #4's experience in a previous hospitalization contributed to her frustration with the comparative lack of care coordination for her mother – suffering a complex set

TABLE 3. Pre-Engagement Factors
Selected Illustrative Quotes

Case	Surgeon Experiences, Style, Beliefs
	Formal training
13	I think it's okay [for residents] to give clinical updates, but I'm not so sure that it's in their scope of practice to talk to [families] about the actual death. . . You don't want . . .a resident to confound any information.
14	My medical school is really proactive about trying to get us to be good communicators, and we would work with standardized patients a lot. . . trying to get comfortable with talking about uncomfortable things.
14	I think there's benefit in practicing [difficult conversations], and we've done that here [in residency]. And I think the more you do it, and the more you put yourself in that situation and open the door for meaningful conversation with families, the better you'll get at it.
	Patient-family centered approach
3b	I told [Child Life] yesterday, “Go up and check with them, because I don’t want this kid, if his grandfather dies, I don’t want this kid to believe for the rest of his life it was his fault,” you know.
8	[Family]: I’ve seen a lot of physicians [where] you're a piece of meat and you're just ‘somebody else that I'm going to work on;’ [R 8] didn't act like that at all. He gives you the impression that you are all he is thinking about at that moment. Yeah, we mattered.
14	His wife and mother-in-law are there all the time. . . They made for him a big poster board where he can point at letters and kind of communicate that way, because he's not quite to the point of being able to speak. He's always got music playing in his room. He's got some home/personal effects around the room, that I would imagine help him feel a little more homey.
	Physician centered approach
13	I explained it to them well and despite me prodding, they didn't have additional questions. And they knew that when it comes to traumatic brain injury, the exam, I told them, is everything. And so they understood. . .. It's just me to be direct. Most family members appreciate it. . . Direct and honest communication, no beating around the bush, no sugar-coating anything.
13	Patients and families. . . can't make these decisions. They can't understand this. This is not in their ability to grasp what's going on. . . .[If] you tell them the pros and cons of each one, then decisions linger and they have to discuss it with people. And that's when you get someone who has an opinion on one aspect and a nurse who has an opinion, and they can't make a decision.
	Surgeon’s mentors
8	Our family doctor, who took care of my family, my brothers . . . and my grandmother. He was very invested in all of his patients. He was always a good role model. Regardless of what kind of day or night it was, if something was going on, he knew— he was the one person I always respected.
	Practice experience
1	If I have to choose. . . it’s the families' feedback. Even when the outcome is death, I get positive feedback, and I think that is the most influential thing for me, learning that you can actually leave a positive impact even in a very negative situation like that.
3a	One thing I learned for sure is the family may be hostile to the care providers, but that doesn't bother me at all now. . . I'm more insightful as far as the calamity that they're going through and how they express it. I'm able to go beyond that and look at the person inside.

of diagnoses – in our TICU. Another family member of a patient with a similar case complexity felt well cared for, in part owing to expectations set by his son who had told him, "If you’ve got a good nurse, you’ve got good care.”

When a family member’s expectations were exceeded, they describe feeling well cared for and confident in their providers and their own decisions. Patient #11 was admitted with a TBI following a stroke and fall; at the time of our interview, her surgeon awaited a fourth son to arrive from out of country to reconfirm the decision to transition to comfort care. The family expected to be informed and educated during their mother’s hospitalization, and expressed surprise and deep gratitude for the extra care and kindness they experienced while being continually updated and educated regarding their mother’s condition. They described their providers as attentive, patient, thorough, compassionate, and understandable. They had a sense of being “on the same level as the doctors,” as if they were “family” and “part of the team.”

Surgeons identify family communication style and temperament as impacting their quality of engagement. They described caregivers positively (“nice and

TABLE 4. Pre-Engagement Factors: Family Experiences, Communication Style
Selected Illustrative Quotes

Case	Family Previous Experiences and Knowledge
4	When I was in intensive care 10 years ago . . . they assigned a doctor and they were responsible for the entire body. And I don't see that here
6	Before, in my prior life, I was studying on a graduate level left hemisphere trauma. . .[the nurses] knowledge of left hemisphere damage. . .[and] ability to try to make a communicative link with her has been incredible to watch.
7	We get it. She's been in the hospital . . . many times. You never know when the doctors are going to be here. So we were happy to hear . . . that regardless of when we got here, that a doctor would be made available to us to talk about where she is and what's going on.
6	There's sort of a cerebral impact of a urinary tract infection, which could cause an overlay of confusion that maybe on top of the brain.
12	I have a son who's a registered nurse, and he's told me, "If you've got a good nurse, you've got good care," and we've had good nurses here the whole time.
	Family communication style
3	I had asked [the surgeon] to give it to me straight. She described that there looked like there had been a lot of damage to the brain, long term it's likely we'll need to make choices about his care but that won't be in the near term, that'll be over the next several days to even weeks.
3a	[Attending]: He seemed to really understand the idea that coming down the pike, depending on how he recovered, what progress we saw that they might behaving to make some decisions about.
4	We're probing, constantly probing for information.
9	[Attending]: I was interrupted at every step of the way with comments that showed no understanding of what I was saying.

understanding") when conversations went smoothly, and "difficult" caregivers with more frustration. One surgeon described a challenging encounter in which, "I stopped [the conversation]. . . because I could see that I was going nowhere, wasting my time and the family member's time."

Hospital Factors (Table 5)

The hospital is an inherently challenging environment for families.[11-13] Families note that the TICU's processes can be difficult to discern, especially determining who is in charge of the patient's care and when information or a physician might be available. Although patient rounds offer one opportunity to obtain information, it is not consistently a convenient time for physicians to engage the family. Caseload, staffing, and physician preference exert significant influence on the process. During data collection, our TICU did not clearly delineate who was responsible for orienting family to hospital processes, and some were distressed by their perception of a poorly coordinated system. One son, whose mother was admitted with a TBI due to a fall at home amidst recent decline from lung cancer, struggled to glean information about the patient's care, noting, "There's no key point of contact physician." Another family member suggested that "managing uncertainty" regarding how and when the family would receive information would reduce "90 percent" of a family's member's distress.

In our TICU, one attending serves as supervising for one full week and 3 residents are assigned to the unit for one month at a time. Residents described the rounding process as attending-dependent, resulting in a variable family engagement process. Some attendings spoke with families as they rounded, while others were less accessible. Attendings note, "It's not easy fitting those conversations in the middle of a busy schedule in the ICU," and, "If I'm way behind and the ICU is crazy, the first thing to be sacrificed is talking to the families." In addition, surgeons admit, "sometimes we just avoid talking to families because we don't have time or it's an uncomfortable thing to do," and that, "It's just a matter of optimizing the use of the available time."

Families observe the rhythm of the ICU and often understand the challenge physicians' face. The husband of a long-term hospital patient explains, "I don't expect the doctors to come in and have a lengthy conversation with us. They've got a lot of things to do." When information is timely and coherent, family caregivers are notably appreciative; when they feel ignored or avoided, or when a physician seems rushed, families express frustration. Regardless of attending "usual practice" of family engagement, residents often provide updates or answer family questions. Residents explain that "when attendings are in the OR, running codes, and you're with the patients, [we residents] certainly have those conversations." Importantly, families describe the nursing staff as critical sources of information for both hospital processes and clinical updates.

Postadmission Factors

Family and Patient Factors (Table 6)

Our study selected for acutely ill patients; case complexity ranged from patients with a single injury requiring minimal specialist involvement, to those with an

TABLE 5. Pre-Engagement Factors: Hospital Factors
Selected Illustrative Quotes

Case	Patient Rounds, Family Access to Information
	Surgeon perspective
5	I would say that that just the time that I would have and how busy I am in the day actually does affect it [family access to information] unfortunately. . . if I'm way behind and the ICU is crazy I- the first thing to be sacrificed is talking to the families.
5	Last year [the fellow] would be our go-to person a lot of times to be able to spend time with families whereas, the attending wouldn't. And she was also pretty comfortable speaking with families.
12	[Resident]: We have a different philosophy in terms of if we're going to go ahead and talk to the family immediately after we round on them or not. And the philosophy is dependent on the attending of the week. Every week ranges from asking the family to stand out in the hallway with us when we round to, “Hey! Don't stand out here in the hallway. We'll give you updates later,” kind of thing.
14	[Resident]: By the second year or third year. . . it’s night, attendings are in the OR, running codes, and you're with the patients, you certainly have those conversations.
	Family perspective
3	You're sitting there a long time and your brain's turning and you're going, "When do I get the next hit of info?" If somehow you could convey, "Here's the plan for today for you, we got this guy coming, this guy coming, this guy coming. . .” I think managing that uncertainty regardless of [how long it will be] I think that you'll keep people's frustration low.
4	I have spoken to [the doctor] as she did her rounds. She took the time to answer [our] questions. She showed us the scans and explained conditions and treatment plans. I think she was very [good]. But I honestly haven’t met any other doctors here. There’s no key point of contact physician who we know we’re going to talk to on a daily basis, [or even] on a periodic basis [to tell us], “Here’s the status. Here’s the latest.”
6	We’ve gotten beautiful feedback from the outstanding nursing staff. . .The nurses that have cared for her have been very loving and I’ve relied on them for information. Because I got next-to-nothing yesterday from the neurosurgeon.
11	[It was an] absolutely quick [interaction]. Cold. It made it harder. He looked at her. He said, “Nothing not serious about it.” I never saw him again after that. It hit me hard.
11	The nurses would come continuously, briefly tell us what they’re doing and what they’re going to do and absolute care was taken. They show a lot of empathy on picking her up, picking her arm, changing position, cleaning. Absolutely, I mean, careful, gentle, caring. . . very assuring, very calm, very attentive. The nurses have been amazing.
12	The nurses who come in have been great. They have answered any questions we've had. They tell us what's going on, what they're doing, why they're doing it.

extensive medical history necessitating the care of multiple specialists. While all family members described high stress levels in the TICU, our qualitative data do not suggest that the most complex cases were associated with the highest levels of family stress. Almost all subjects reported sleep deprivation, concern about patients’ acute condition, anxiety regarding medical decisions, confusion regarding hospital processes or incomprehensible explanations, and linked those experiences to their feelings of stress. As noted above, family expectations appeared to moderate our subjects’ stress response.

Surgeon Factors (Table 7)

Ongoing experience with the case influenced surgeons’ level of comfort with the family, and possibly their likelihood of engagement. Surgeons expressing discomfort with the family noted that they were less likely to seek them out; this discomfort may be related to unpleasant experiences with the family or a disinclination to engage in “difficult” conversations. Of note, although all attending surgeons caring for the study family members were invited to participate in an interview, several were unavailable. In particular, we were unable to secure interviews with those providers described by the family as “avoiding” engagement or “inaccessible” for information. As a result, our study sample may include those attendings and residents most comfortable with end of life discussions.

Family-Surgeon Engagement Quality (Table 8)

Family members’ descriptions of encounters with physicians suggest they exert significant influence on their experience of the hospital, stress level, and understanding of the patient’s condition. Although high quality engagement did not guarantee surgeon-family understanding congruence, families in our study pleased with their communications appeared to demonstrate a better understanding of the prognosis than those with less positive experiences. Those with positive communication experiences described feeling heard, included, cared for, well informed, and confident in their care. They characterized their providers as knowledgeable, trustworthy, competent, gracious, empathic, attentive, and personable. They experienced the system as well coordinated, professional, inclusive, and interpretable.

TABLE 6. Postadmission Factors: Family Expectations, Stressors, Case Complexity
Selected Illustrative Quotes

Case	Family Expectations
4	*Unmet care expectations* [When I was in the hospital] I had twelve doctors. And I had one doctor who said, "I'm the lead. I will be directing all of these doctors. You come to me if there are any issues."... They were looking at the entire person... So I want that whole body, total patient answer [for my mom]. Not just the head injury which is important.
6	*Recovery expectations* She was in the hospital 2 years ago not from a fall but she had dementia symptoms. She recovered partially to be functional at home. So I don't know if she will regain some of her abilities with this injury.... Is this new injury a lot worse than before? Or it's just going to be very difficult to recover from? She can do it again.
11	*Care expectations exceeded* I normally expect [the doctors will be] informing me, teaching me... the doctor that came seemed very, very knowledgeable, very informative. We had updates, other doctors come ... Any question we had, they answered... Pulled out the monitor, and said, "Let me show you," and showed the whole scan ... [using] very laymen's terms, and told me the possibilities, you know, what was the situation and how they're keeping her stable. It was caring, it was informative, it was straight to the point but, very professional. I was able to ask questions and she would show me again, and so I felt better. I believe they were waiting for me to be ready to make some decisions. But she said not to rush, to just spend time together, and we did... Absolute care was taken. We've seen many many doctors. Same care. And even [when we were] asking very... silly questions, they are always professional, patient, and encouraging us to have ... open communication. There's no patient-doctor type of, you know, difference.
	Family stressors
2	We were thinking oh, maybe because my mom is under charity they don't want to keep my mom that long so that's why ... they don't want to give more therapy for her. Maybe – the other people, they have insurance so they <crying> keep them longer and the therapist for them.
3	I didn't know if I was coming or going. They said, "Go see your husband." I did and then I came and I just stayed in here... And then there was some lady, I can't remember what she was telling me. They were saying, "We're going to have to do surgery immediately."
6	And I can remember I was very shaken the first time I spoke to the neurosurgeon, because I felt like we had a very small window of time to make the decision.
11	I hadn't slept in 2 days. Just last night I slept 4 hours, so I'm a little bit hazy.
15	Our son, he's 23 and he lives with us. We were at another function about an hour away when we got a call but I didn't pick it up right away. They left a message and just told us that something had happened – there had been a motorcycle accident and [our son] was in the ICU and we should get here as soon as possible.
	Case complexity
5	*Less complex* [My father] fell off of a ladder onto a piece of concrete, I guess in a garage area, and that's– I guess he just lost consciousness or– and then, he has a bruise on his brain.
8	*Highly complex* [My wife] had a kidney transplant five years ago [and recently had] been here for about 18 days for unspecified illness ... It was a tradeoff decision between did she need the rehab for the leg strength versus a perceived risk ... given that she has no immune system.

TABLE 7. Postadmission Factors: Case Complexity and Surgeon Experiences
Selected Illustrative Quotes

Case	Surgeon Experiences of the Family
3	It's not easy fitting those conversations in the middle of a busy schedule in the ICU... you can always do more, spend more time, take the time... It's not like we withhold available time.
5	The daughter was nice and understanding... she was easy to talk to, very accepting of the information. Not ... challenging it or getting too upset.
8	I have had the benefit of interacting with [the patient] over the last 3 weeks, which I don't always have the pleasure of.
9	I stopped saying what I had planned on saying, because I could see that I was going nowhere, wasting my time and the family member's time.
11	Sunday night I was talking with the oldest son, and ... he seemed receptive. At that time, the younger son was here, but unwilling to come in the room, apparently was in the hallway sobbing, and didn't want to know any medical information. He was just very tore up, and it wasn't 'til the next day that I got to talk to the younger son as well.

Surgeons in our study caring for families sharing positive communication experiences described their own approach as patient-, person-, and relationship-centered, and responsive to unique communication needs. They emphasized the importance of frequent low-stakes conversations to build trust and convey accessibility. They

TABLE 8. Postadmission Factors: Observed Family-Surgeon Engagement Quality
Selected Illustrative Quotes

Case	Surgeon Perspective of Engagement	Family Perspective of Engagement
	Higher quality	
6	They were very easy to talk to. They were kind of understood all the options. They were carefully like weighing their options. They I think we're really trying to do what was in her best interest and there just very easy conversation.	The trauma surgeon was superb in his ability to summarize . . . at very preliminary stage were our options. Since we'd had such a good conversation, we sought him out and said, "Here's the advice we've gotten, do you have a sense about it?" He was very gracious.
8	You just have to be kind and . . . give people time to process the information. . . And depending on how they take it, you dictate your conversation.	Through it all, I've been in incredible communicating hands . . . you couldn't ask for better communication skills.
11	I had a neurosurgery PA come down - I went in at first and got the impression he was kind of on the fence and wanted some clarification - what [neurosurgery] had to offer. We went in together, explained injuries, the severity of the injuries, what options we had.	[The doctor] came in with I think 2 other nurses and he explained what had happened, the possibilities and not possibilities, and he was absolutely excellent and he was attentive. He knew what he was doing, what he was saying, and he heard us.
14	[I like to sit] down and spend the time to say, you know, "How long do you think it will take your husband to recover? Do you understand exactly what's going on, what's happening in terms of how much of this he's got left before him? Tell me what your understanding is."	I've been really impressed with the way things run, how knowledgeable everyone is, and a lot of them also stress to me that I need to take care of myself, which is very difficult, because . . . I've never had this experience of being the wife of a patient, especially in an ICU.
	Lower quality	
2	I was very clear and blunt. I really laid [it out]: "I don't know if she'll ever make it home. She might be vent dependent [or] have another stroke. I don't know if she'll live through this." They asked some minor questions and were very attentive, but they didn't ask a whole lot of questions.	Maybe [the doctor] explain it to us but we still confused because we were sleeping and then he came and then suddenly we get up and then listen everything. [That was] just one time [we saw the surgeon]. We still want to ask something but maybe we couldn't because at that morning time we are not ready to ask.
13	The nurses came to me once or twice . . . asking about a transfer . . . to another facility for a second opinion and I told them that wasn't an option. I told them we were the second opinion always and that people come to us. We don't transfer out. And that was it. That was the last I heard of it.	We wish to have more options or if a doctor can come in and tell us and explain if there is something left to do? We're kind of expecting the doctor to be here soon to discuss that. We haven't talked to our doctor today. We've been talking to the nurses.

recounted extensive stories of the family's experience, stressors, coping, and values. They described "sensing" a family's needs, and having "insight" into the trauma experience, and the "benefit" of time to spend with the family.

Each family experienced a range of communication quality throughout their hospitalization, and each surgeon described how their own practice varied throughout the day or week, depending on current caseload, personal wellbeing, and sleep patterns. Families describing poor communication experiences expressed frustration with their inability to understand or access information. For instance, when awakened during the night with surgical updates, they appreciated the immediate report, but were unable to fully understand or retain the information. Receiving conflicting information or no information increased anxiety and decreased their sense of understanding the patient's condition and prognosis, such as when a subspecialist described plans for surgery that the trauma attending had ruled out. Family members with these experiences expressed anxiety, anger, confusion, frustration, a lack of trust in the providers, and a sense of being excluded from the care team. They distrusted the poor communicators and described them as cold and dismissive, as well as "ridiculous and incompetent." While not all families experiencing poor communication distrusted the hospital as a whole, they less often described the system of care as coordinated and inclusive.

DISCUSSION

The purpose of this study was to understand and describe how critical care surgeons communicate a patient's poor prognosis with families in a large trauma intensive care unit – from both the surgeon and family perspective – and to identify factors that facilitate family-surgeon congruence of understanding of the prognosis. We further sought to identify mutable factors and key performance gaps to provide focus in our process improvement efforts and resident communication training program. As a result of our initial findings, we have begun implementing new practices and procedures, and have adapted our communication program to focus resident skills training on key factors identified in this study.

Our data suggest that congruence varies widely, and is significantly influenced by the quality of engagement between the family and surgeon. Family members reporting positive communication experiences with their surgeons described them as knowledgeable, trustworthy, competent, and empathic, and characterized the hospital system as well coordinated, professional, inclusive, and interpretable. These families felt well informed and confident in their care. Family members struggling to gain access to information or receiving conflicting information expressed significant distress and confusion. When uncertain about when, how, or from whom they would receive information about their loved one, or when describing their physician as "cold" and "rushed," family members described feeling frustrated, angry, and distrusting.

We noted multiple factors influencing this relationship, including those in place prior to the patient's admission and those occurring as a result of the admission. Preadmission factors included previous experiences and training, personal history, and beliefs of both the family and the surgeon. The more dynamic and mutable factors included how well the surgeon's communication style matched the family's communication needs, the family's expectations regarding the patient's care, and hospital processes. These factors further influenced family members' level of trust in the system and providers, and the quality of communication. Surgeon-family engagement was further influenced by surgeon caseload, staffing, and schedules, which we called "hospital factors." Sleep deprivation, a frequent result of these factors, was often described by both family and surgeon. An exhausted surgeon and family member lacking adequate support from staff or friends had more difficulty engaging in satisfying high-quality conversations that resulted in a well-informed family than those who were well-rested and graced with support.

Our findings are consistent with family needs and recommendations found in the literature that focus on supporting patients and families in critical care.[12-14] One study focusing on family members of critically ill ICU patients identified several nurse communication strategies that supported family members during this time, including demonstrating concern, building rapport, providing factual information, and supporting decision making.[15] Carlson et al.[13] in a study of family members of trauma patients in an ICU, found that frequency of communication and information needs being met were strongly related to ratings of support and staff skills. Numerous other studies recommend structured communication system aimed at improving participation in decision making, family satisfaction, and coordination of care.[13,16,17]

Our process improvement focus aimed at reducing family and patient uncertainty and increasing their sense of control now include: (1) increasing our emphasis on attending and resident involvement to ensure daily family updates; (2) adding "family/patient updating" – and key components to be included in the update – as part of the daily rounds checklist; (3) updating nursing practice to include orientation to our Patient and Family Handbook describing TICU processes, such as how and when a family can receive updates from the physician.

Our ongoing surgical resident communication training program provides education and skills practice aimed at meeting the ACGME goal that residents demonstrate communication skills resulting in effective information exchange with patients and families. Consistent with the findings from this study, our curriculum includes a focus on building surgeon-family trust by assessing family knowledge, expectations and current understanding of information shared, and communicating information empathically and confidently. We assess resident skills during simulation using the Communication Assessment Tool (CAT)[18] previously validated in the simulation environment; our patients provide feedback using the same assessment tool following surgical clinic visits.[7,19,20] While the CAT assesses the patient and family experience of the surgeon's communication, it does not assess their understanding of the patient's condition. Phase II of this project includes the development of such a tool.

Future training modules will include a focus on improving emotional intelligence, including an awareness of personal factors that may impact the quality of communication with patients and families. Providers can learn to identify and address these factors – fatigue, time stressors, personal biases, previous experiences with patients, situations or characteristics that trigger emotional responses – rather than automatically reacting to them. All training modules provide practice with simulated patients trained in learner-centered feedback that encourages introspection and self-awareness. In addition, education and updated processes will focus on building relationships with families by encouraging frequent "low-stakes" meetings with family, increasing family's sense of inclusion and familiarity with the physicians. More concrete guidance, such as use of the "Best Case/Worst Case" communication tool, will be introduced to facilitate difficult in-the-moment surgical decisions and encourage surgeons to identify patient and family values and goals.[21]

Limitations of this research should be considered for the generalizability of our findings. First, this was a qualitative hypothesis-generating study of a nonrandom, convenience sample of a small number of family members and surgeons. As with most qualitative research studies,[22] ours was designed to study a specific phenomenon in a unique population in a particular context; we sought a deeper understanding and explanation of the phenomenon rather than generalizability to other contexts. Secondly, our nonrandom sample included only those interested in participating; while all families expressed a willingness to participate, their surgeons were not as readily available. Surgeons interviewed may differ from those we were unable to reach; our representation of the surgeon perspective may not include those less comfortable with “difficult” family conversations. Finally, our sample includes only English-speaking family members; we anticipate the communication difficulties to be significantly worse for non-English speaking family.

Future research to strengthen our findings include: (1) designing and implementing a follow-up survey based on the variables in our conceptual model to provide a broader view of the topic and to test our hypothesized relationships (Phase II), and (2) conducting training aimed at improving the prognosis discussion to include surgical attendings as well as residents, and (3) collecting follow up surveys from families to assess the impact of this training. We have initiated Phase II, survey development and implementation; analysis of these data will guide our training efforts.

CONCLUSIONS

Family members’ understanding of their loved one’s critical condition varies widely and is influenced by myriad factors, including the hospital system, surgeon communication skill, case complexity, and family background. Communication tailored to unique family needs resulted in more positive engagement: families then felt well informed, confident, and trusting. Poor communication experiences resulted in family distress and distrust of providers. Communication training and focused mentoring are needed for residents to gain important skills; ICU process improvements should focus on enhancing family access to information.

AUTHOR CONTRIBUTIONS

ABN: Study design, implementation, data collection, analysis, interpretation, manuscript preparation. CA: Study design, data collection, analysis, manuscript editing. CG: Analysis and interpretation, manuscript preparation. HJCN: Data collection, analysis and interpretation, manuscript editing. DM: Analysis and interpretation, manuscript preparation. MMG: Analysis and interpretation, manuscript editing. JD: Study design, analysis, interpretation, manuscript editing.

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SUPPLEMENTARY INFORMATION

Supplementary material associated with this article can be found in the online version at doi:10.1016/j.jsurg.2019.05.017.

APPENDIX A

Family Interview Guide

Background
<Listen for family dynamics and experience>

- Tell me a little about how your [loved one] was injured.
- How are you related to [patient]?
- What other family members are able to be here while [patient] is in the ICU?
- How much have you been able to be here since he/she was admitted?

Communication with Providers
<Probe to understand the name/specialty of providers for potential interview>

- Who have you gotten most of your information from regarding [patient]'s condition and treatment plan?

Patient's Condition and Prognosis
<Probe to discern confidence in understanding and impact of information>

- Tell me what you understand about [patient]'s condition.
- What do you understand about his/her treatment here in the ICU – what do they say about why they are [doing whatever treatment]?
- What are some of the other treatment options you understand they/you might consider for [patient]?
- Have you discussed what the [patient]'s recovery is likely to look like with the doctors? And by that, I mean, have the doctors discussed [patient]'s prognosis with you at all?
- If yes: →What have they told you? If no: → what do you think his/her recovery is likely to look like?

Family Understanding of Condition
<Aim to open a discussion about community influence on the primary family member's understanding and acceptance of the situation>

- Have you and your family/friends discussed [patient]'s condition/prognosis? How do you believe your family members/friends understand [patient]'s condition/prognosis at this point?

Influence on Understanding

- Who has been most helpful to you in your family/friends/community when striving to understand the medical situation here?

<Probes to understand the "scenes" in which discussions have taken place with providers>

- Where did you met with the doctors to talk about [patient]'s condition/prognosis?
- Who is most helpful to you on the medical team to help you understand [patient]'s condition/prognosis? How is s/he helpful – what does s/he do to help?
- What is least helpful to you – either family/friends/doctors/nurses/schedule – as you try to understand [patient]'s condition/prognosis?

Surgeon Interview Guide

Patient Condition and Prognosis

- What would you say the patient's prognosis for survival/meaningful recovery is? *<probe for details >*

Background – Contact with Patient and Family

- When did you first begin treating this patient?
- Have you met with any family members since the patient was admitted?
- If yes: Whom did you meet?

Re: Communication with Family

- What have you discussed with the family regarding the patient's condition and prognosis?
- When you met with the family to talk about [patient]'s condition/prognosis, where did you meet? *<Probe to understand the "scene" in which such discussions have taken place>* Who was present?
- How well did you feel the family understood and accepted your information? *<Probe: what makes you say that?>*

- Do you remember what kinds of questions the family asked?

Influence on Understanding

- What do you think is helping/hindering the family's understanding/acceptance of the patient's condition and prognosis?
- Is there someone in the family do you feel really "gets it" and others who don't? What gives you that impression?
- What do you think has gone well so far regarding communicating with the family about the patient's situation? What have you done well?
- Is there anything you/the team might have done differently to help the family's understanding?
- What do you notice makes the most difference when "getting on the same page" as the family members? What seems to get in the way of your families understanding the prognosis?

Influence on Practice

- How did you learn what you know about having these kinds of conversations? Who has been most influential in the development of your style?
- What kind of formal training did you get in medical school and residency to prepare you for this communication? Have you had more training since that time?
- [for attendings]: How well do you think our residents are prepared to manage these conversations? How comfortable are you with our residents having these conversations with your patients?
- [for residents]: How well do you think you are integrated into the process of updating families? How well do our attendings include and train you in "difficult" discussions?