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ORIGINAL RESEARCH

Family Comes First: A Pilot Study of the Incorporation of Social Support Into Resident Well-being

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INTRODUCTION

Although physician burnout is more commonly recognized and intervened on compared with years past, it remains problematic, as 44% of US physicians report experiencing at least 1 symptom.¹ Rates of burnout in resident physicians are similarly problematic, with a recent study demonstrating its prevalence at 48.8%.² Physician burnout is linked to several adverse consequences, including an increase in patient safety incidents and more frequent substance use disorder and suicide.³⁻⁵ Burnout is also costly, because it leads to increased physician turnover, decreased productivity, and increased medical errors.^{6,7} Many factors put residents at high risk for developing burnout, including minimal control of their schedules, stress associated with medical errors, exposure to patient suffering, the board certification process, lack of gratitude or respect for their work, and difficulty maintaining interpersonal relationships.^{8,9} Anesthesiology residents may be at additional risk because they work in highly stressful environments (ie, operating rooms) where they are frequently the only member of the anesthesia care team in the room (the attending is often covering another location). Furthermore, junior anesthesiology residents are typically assigned to cases that are staffed by senior surgical residents and attending surgeons. Subsequently, anesthesiology residents are often the least experienced persons in the room.

Recent work has shown that the psychological well-being component of social relatedness (ie, engaging in conversation with others to improve understanding and appreciation of one another) is associated with overall resident well-being.^{10,11} Understanding of work-related stress by family and friends is also associated with increased resident well-being.¹² However, it is often difficult for residents to communicate their role in the health care system to people with a minimal understanding of the medical field.¹³

The University of North Carolina (UNC) Department of Anesthesiology developed a Family Anesthesia Experience (FAX) program that provided support persons (SPs; ie, family and friends) of anesthesia providers (ie, attendings, residents, and nurse anesthetists) an opportunity to learn about the roles and functions of anesthesia providers through a series of simulation experiences involving observation and hands-on participation.¹⁴ Given the success of the UNC departmental program, we modified it to focus specifically on our most vulnerable population, new first-year clinical anesthesia residents (CA-1) transitioning from internship into clinical anesthesia.¹⁵ This modified program allowed us to educate our residents alongside their SPs on important issues, such as wellness, burnout, and substance abuse, as emphasized by the Accreditation Council for Graduate Medical Education,¹⁶ while also educating their SPs on the roles and expectations of anesthesiology

residents. We report on a collaborative pilot study of the FAX used at UNC and the University of Kentucky (UK). Our primary hypothesis was that FAX would increase SPs' understanding of the role of anesthesiology residents. Our secondary hypotheses were that FAX would improve communication between residents and their SPs, increase resiliency, increase social support, decrease stress, and decrease burnout in residents.

MATERIALS AND METHODS

The study received institutional review board exemption from UNC and UK.

Participants

The target population included 30 residents at UNC (n = 15) and UK (n = 15) who were CA-1s in 2017 and their SPs. The control group included 30 residents who were CA-1s in 2016 and their respective SPs, who were not exposed to FAX. All CA-1s at the 2 institutions were eligible to participate. There were no exclusion criteria.

To increase the ability of SPs to attend, "Save the Date" emails were sent out 5 months before the event. If resident's SPs were unable to attend, they were encouraged to invite close friends, even those from other areas of medicine.

Family Anesthesia Experience

FAX was a 4-hour program that each institution hosted on individually selected Saturdays in early fall 2017. This time was specifically chosen because it is

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immediately before CA-1s begin taking overnight call. FAX started with the “Day in the Life” video showing SPs the physical spaces in which residents work and learn (ie, operating rooms, conference rooms, postanesthesia care unit). The video was created by UNC residents and played during each institutions’ FAX event. Then a series of short lecture-based didactics were presented on wellness, burnout, substance abuse, financial wellness, and local support resources available to residents at their respective institution (Figure 1). The didactic presentations were the same at both institutions with the exception of local support resources, which were institution specific. As part of the description of local resources available to residents, a face sheet was distributed to SPs that contained pictures, names, email addresses, and phone numbers of residency program directors. SPs were encouraged to reach out to program directors if they had concerns about their resident’s well-being. Each institution then hosted a panel of senior residents and their respective SPs to provide information regarding residency, life as an SP of an anesthesiology resident, and to answer questions. The attendees then had lunch together as a means of promoting social interaction among residents, SPs, and anesthesiology faculty. Lunch was followed by a simulation experience. The group was split into thirds, each rotating through 3 simulation stations. Station 1 allowed CA-1s to teach their SPs airway management skills, such as bag-mask ventilation, laryngeal mask airway placement, direct laryngoscopy, and fiberoptic bronchoscopy, on airway mannequin heads. At station 2, faculty members and senior residents taught CA-1 residents and their SPs central venous catheter placement, peripheral nerve block placement, and neuraxial anesthesia techniques (ie, epidural and spinal blocks) on simulated partial-task trainers. At station 3, CA-1 residents and their SPs observed a high-fidelity simulation of a perioperative patient care experience, which included a preoperative patient interview, induction of anesthesia, and an intraoperative code with resolution. A facilitated debriefing with an attending anesthesiologist followed, allowing SPs to

react to what they observed, share their feelings, and ask questions. See Figure 1 for FAX details.

Surveys

Table 1 summarizes the survey design. All surveys were anonymous to avoid social desirability bias. Participants entered an individualized code when completing surveys so responses could be linked by participant over time. Participants received a guaranteed gift card reward for the completion of each electronic survey.

CA-1 Participants

The intervention CA-1s were electronically surveyed before FAX (pre), and at 2 weeks (post), 2 months (2-month), and 8 months (8-month) after FAX. All surveys included validated scales for stress,¹⁷ burnout,^{18,19} resilience,¹⁷ and personal support.²⁰ The postsurveys and 2-month and 8-month surveys also asked questions about FAX to determine if the CA-1s perceived the event improved their SPs’ understanding of the role of an anesthesiology resident. The presurvey and 2-month and 8-month CA-1 surveys were identical, containing the wellness questions. The CA-1 postsurvey contained questions regarding the overall ratings of the experience (see Appendix A for the CA-1 postsurvey). Both the control CA-1 group and the intervention CA-1 group were surveyed at the 8-month period (ie, April of their CA-1 year). The control group’s 8-month survey contained the same validated scales for stress, burnout, resilience, and personal support as the intervention group’s 8-month survey but did not include FAX-related questions. CA-1s took 5 to 15 minutes to complete each survey.

Support Persons

The intervention SPs who participated in FAX were also surveyed. Presurveys and postsurveys were administered on paper, whereas 2-month and 8-month postsurveys were administered electronically. The presurvey asked for demographic information and questions about their perceived understanding of the role of an anesthesiology resident. The post, 2-month, and 8-month surveys asked SPs how they perceived FAX and queried for suggestions to improve the event (see Appendix B for the SP postsurvey). These

3 surveys were the same, with the exception that the postsurvey had 2 additional questions querying SPs on how much they learned from and if they enjoyed the event. The surveys repeated the questions on perceived understanding of the role of an anesthesiology resident and knowledge questions about anesthesiology residency. The control SPs received the same survey as the intervention SPs’ 8-month survey with the exception of FAX-related questions. It took approximately 5 to 10 minutes to complete each SP survey.

Data Analysis

Two-sample *t* tests and Mann-Whitney *U* tests were used to compare the intervention and control groups at the 8-month follow-up. Paired-sample *t* tests and Wilcoxon signed-rank tests were used to compare intervention groups’ responses to presurveys and postsurveys. Repeated measures analysis of variance was used to track changes in survey responses over time in the intervention group that completed all 4 surveys (pre, post, 2-month, and 8-month). Data analysis was completed using SAS 9.4 (SAS Institute, Cary, NC)

RESULTS

A total of 26 CA-1s (UNC *n* = 14, UK *n* = 12) attended FAX, with 4 CA-1s unable to attend because of personal scheduling conflicts. Some CA-1s invited more than 1 SP, resulting in a total of 33 SPs (UNC *n* = 19, UK *n* = 14) attending FAX. The demographics of SPs is summarized in Table 2.

All intervention SPs (100%) completed both pre-FAX and post-FAX surveys. According to the postsurvey responses, all responding SPs enjoyed the event and confirmed that they would recommend this event to a family member or friend. As shown in Figure 2A, SPs reported a better understanding of the role of an anesthesiology resident after attending FAX (Pre: 1.44 ± 0.63 , Post: 2.69 ± 0.33 , $P < .0001$). Table 3 summarizes the details of the measured aspects of understanding. Ten (30.3%) intervention SPs completed all 4 surveys. Their reported understanding in the postsurvey and 2 follow-up surveys was significantly better than their understanding reported in the presurvey ($P < .0001$ for pre versus post, P

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< .0001 for pre versus 2-month, $P = .0045$ for pre versus 8-month). Furthermore, 8 months following FAX, the intervention SPs reported a better understanding of residents' work relative to controls (control: 1.92 ± 0.66 , intervention: 2.57 ± 0.34 , $P = .004$; see Figure 2B and Table 4).

Twenty-two (84.6%) of the 26 intervention CA-1s who attended FAX completed the postsurvey, and all of the 22 responding CA-1s enjoyed participating in the event. Seventeen (65.4%) intervention CA-1s who attended FAX completed both presurveys and postsurveys, among whom 14 (82.4%) believed that SPs' attendance at FAX would make it easier for them to communicate work-related issues with their SPs (see Figure 2C). Fifteen (57.7%) intervention CA-1s completed all 4 surveys, which showed no significant changes over time on perceived stress or resilience. There was no significant difference between the CA-1s who completed all 4 of the surveys and those who did not in terms of the pre-FAX stress ($P = .432$), burnout ($P = .811$), resilience ($P = .226$), and perceived social support ($P = .085$).

The intervention CA-1s who participated in FAX reported higher burnout levels 8 months after the event than what they reported in the pre-FAX survey ($P = .010$), and they perceived less support 8 months after the event than when measured in the presurvey ($P = .034$). Relative to controls, the intervention group CA-1s perceived less stress 8 months after FAX (Control: 1.91 ± 0.61 , Intervention: 1.54 ± 0.42 , $P = .019$, see Figure 2D). There was no significant difference between the control and intervention groups in terms of burnout ($P = .160$), resilience ($P = .247$), and perceived social support ($P = .411$) 8 months after the event.

DISCUSSION

FAX suggests that an effort to engage SPs and improve social relatedness may have a positive impact on CA-1s' well-being. FAX was well received by both CA-1s and their SPs. There was significant improvement in SPs' understanding of anesthesiology residency and how to reach out for help on behalf of their resident. Statistical significance was not reached on all metrics

of well-being for the residents. However, decreased stress was observed compared with the control.

Although there was no change in stress or resilience scores for intervention CA-1s over time, rates of burnout increased, and perception of support decreased over time. This finding could be related to the CA-1s' stage in training. The baseline and immediate postevent surveys occurred early during CA-1 year, whereas follow-up surveys occurred toward the end of the year. Late in CA-1 year, residents often spend large amounts of time preparing for the high-stakes, and stress-inducing, American Board of Anesthesiology BASIC Primary Certification Exam. In addition, at this point in training, most residents are rotating on subspecialty rotations with increasing degree of case complexity and patient acuity. As a result, demands placed on residents toward the end of their CA-1 year are greater than in the early portion of the year. In future studies, we plan to collect additional data to evaluate how this progressive increase in demands contributes to the development of stress in CA-1 residents.

Before FAX, most SPs had minimal knowledge regarding how to contact departmental leadership or how to access university resources for assisting their residents. In future assessments of this program, an additional measurement of interest to track will be when and why SPs contact departmental leadership or access university resources on behalf of their resident.

Both the UNC and UK FAX programs were well attended, with more than 86.7% of residents attending with at least 1 SP. There were some residents whose SPs were unable to attend the program. On review of feedback, residents who attended without SPs enjoyed the event and appreciated the opportunity to meet their classmates' SPs.

This study had several limitations. First, this was a pilot study using a small sample. A future study that involves a larger number of institutions and CA-1s is warranted to further investigate FAX. Second, the instruments used to measure burnout, resilience, and personal support contained a small number of items, which subsequently may have restricted the score

distribution range (see items in Appendix A). In future assessments of FAX, alternate validated scales should contain more items to provide greater discriminating power. Although we used validated scales to obtain objective measures, of CA-1s' well-being, it is difficult to determine the causality of the changes on these metrics (as with all wellness interventions). Even though our intervention is a 1-time 4-hour event, the goal is to help SPs better understand their resident's experience, thereby improving communication between and support of CA-1s by their SPs. In addition, there was an attrition in FAX survey response over time, which may have led to self-selection bias. In future studies, key demographic information of CA-1 participants should be collected to compare those who completed all surveys with those who did not, as well as those who were assigned to the intervention group but were unable to attend versus those who attended FAX. Finally, SPs were asked only about their perceived understanding of the role of an anesthesiology resident, which could be strengthened by using performance-based questions.

CONCLUSION

To conclude, FAX led to improved SP understanding of the role of an anesthesiology resident. This pilot study was conducted at 2 residency programs to demonstrate that FAX could be implemented at an institution other than UNC. Further evaluation in the form of a large multicenter study is needed to determine if the program improves the well-being and social support of anesthesiology residents. In addition, studying the effects of conceptually similar programs for other medical specialties would help to understand the broad applicability of an SP-focused event for improving resident well-being.

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Abstract

Background: Recent work has shown that understanding of work-related stress by family and friends is associated with increased resident well-being. However, it is often difficult for residents to communicate with their support persons (SPs), especially those who have minimal understanding of the medical field, regarding even the most basic functions of their role in the health care system. This study aimed to pilot test an innovative wellness event focusing on the social relatedness component of resident well-being.

Methods: The target population included 30 new residents at 2 anesthesiology residency programs and their SPs in 2017. The Family Anesthesia Experience (FAX) began with didactic presentations and a panel discussion about wellness topics. It concluded with a multifaceted simulation experience. Participants were surveyed before and after the event. Measures included SPs' understanding of residents' work and residents' stress, burnout, resilience, and social support levels. Student *t* tests, Mann-Whitney *U* tests, Wilcoxon signed-rank tests, and repeated measures analysis of variance were used to examine the impact of the event.

Results: Twenty-two (84.6%) of the 26 intervention clinical anesthesia year 1 residents who attended FAX completed the postevent surveys, and all intervention SPs (100%, *n* = 33) completed both pre-event and postevent surveys. The event was well received by the residents (100%) and their SPs (100%). Improvement in perceived understanding in the intervention SPs group (Pre: 1.44 ± 0.63, Post: 2.69 ± 0.33, *P* < .0001) was observed. Not all metrics of well-being for the residents achieved significance in change; however, decreased stress was observed compared with historical controls (Control: 1.91 ± 0.61, Intervention: 1.54 ± 0.42, *P* = .019).

Conclusion: The event led to improved SPs' understanding of the role of an anesthesiology resident.

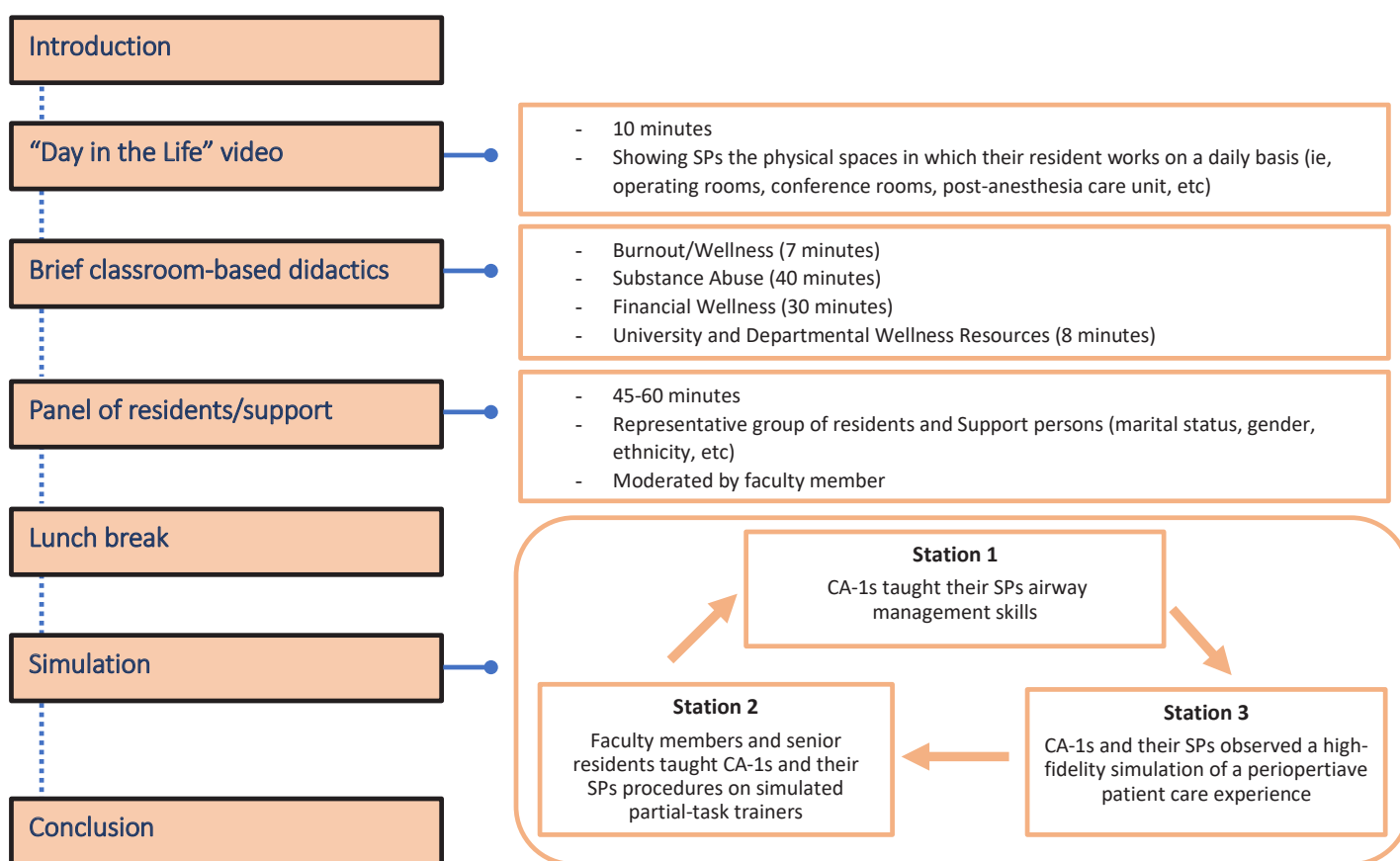
Keywords: Resident wellness, simulation, social relatedness, burnout, graduate medical education

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Figures

Figure 1. Family Anesthesia Experience started with the “Day in the Life” video showing support persons (SPs) the physical spaces in which their resident works. Then a series of short classroom-based didactics were presented on wellness, burnout, substance abuse, financial wellness, and local support resources available to residents at their respective institution. Each institution then hosted a panel of senior residents and their respective SPs to provide information regarding residency, life as an SP of an anesthesiology resident, and to answer questions. The attendees then had lunch together as a means of promoting social interaction among residents, SPs, and anesthesiology faculty. Lunch was followed by a simulation experience. The group was split into thirds, each rotating through 3 simulation stations. Station 1 allowed first-year clinical anesthesia residents (CA-1) to teach their SPs airway management skills, such as bag-mask ventilation, laryngeal mask airway placement, direct laryngoscopy, and fiberoptic bronchoscopy, on airway mannequin heads. At station 2, faculty members and senior residents taught CA-1 residents and their SPs central venous catheter placement, peripheral nerve block placement, and neuraxial anesthesia techniques (ie, epidural and spinal blocks) on simulated partial-task trainers. At station 3, CA-1 residents and their SPs observed a high-fidelity simulation of a perioperative patient care experience, which included a preoperative patient interview, induction of anesthesia, and an intraoperative code with resolution. A facilitated debriefing with an attending anesthesiologist followed, allowing SPs to react to what they observed, share their feelings, and ask questions.



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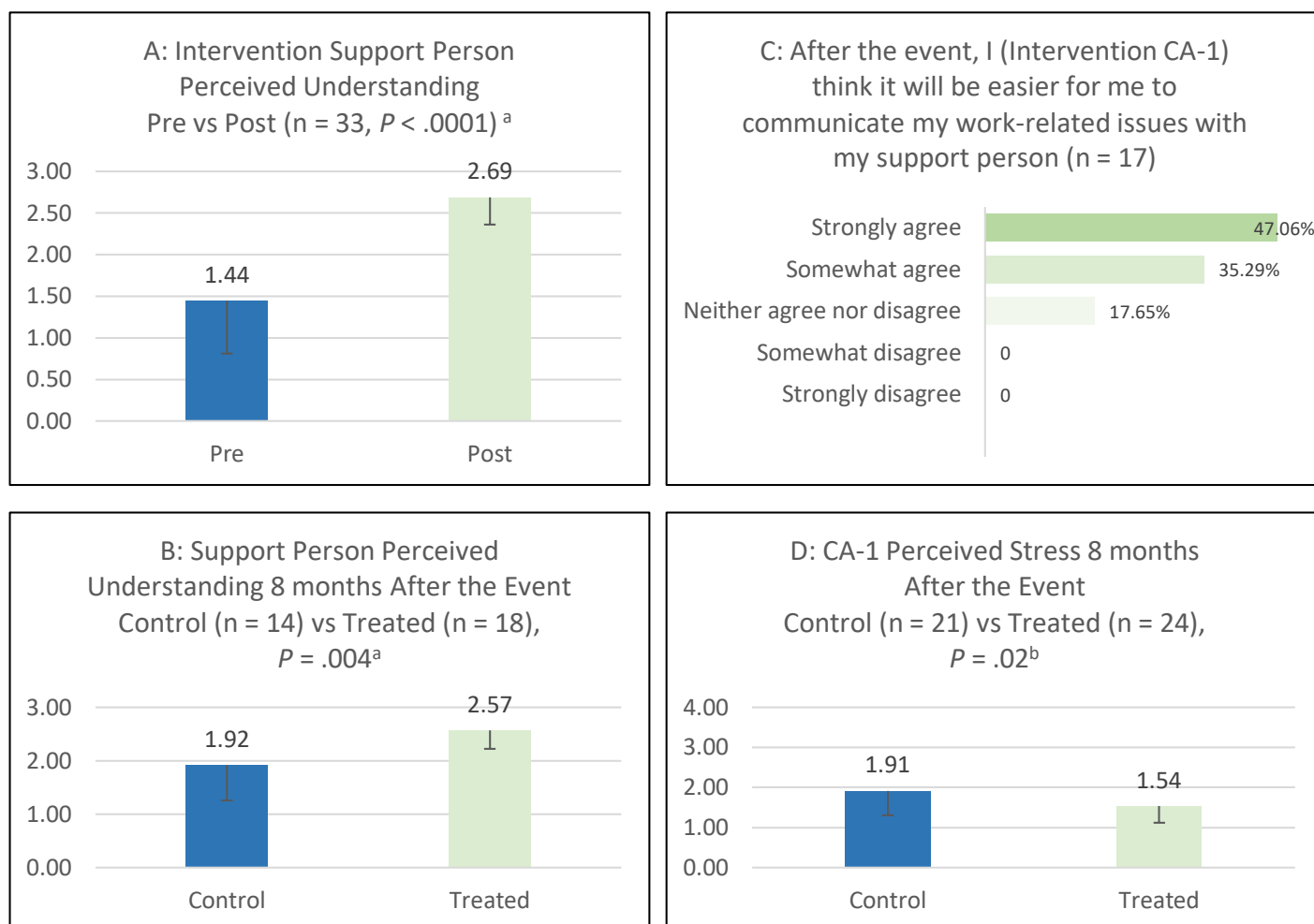
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Figure 2. Summary of outcomes. (A) Intervention support persons perceived an increased understanding of the role of an anesthesiology resident after attending Family Anesthesia Experience (FAX) than before FAX. (B) Intervention support persons reported a better understanding of an anesthesiology resident's work 8 months after FAX than the control support persons did at the same time period in their first-year of clinical anesthesia residency (CA-1). (C) Fourteen of the CA-1 residents who attended FAX and completed presurveys and postsurveys believed that their support persons' attendance at FAX would make it easier for them to communicate work-related issues with their support person. (D) CA-1 residents who attended FAX scored lower on the stress scale 8 months after FAX than the control group.

^a The answers were given on an ordinal rating scale (0 = not at all, 1 = somewhat, 2 = moderately, and 3 = mostly). Average of ratings on 9 questions. See Tables 3 and 4 for breakdown of the results of each of the 9 questions.

^b The answers were given on an ordinal rating scale (0 = never, 1 = almost never, 2 = sometimes, 3 = fairly often, and 4 = very often). Average of ratings on 14 questions. Reversed score on several questions. High score indicates high perceived stress.



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Tables

Table 1. Survey Design Summary^a

Time	Intervention Group		Historical Control Group ^b	
	CA-1	Support Person	CA-1	Support Person
Pre	Electronic survey	Paper/pencil survey	—	—
Post ^c	Electronic survey	Paper/pencil survey	—	—
2 months	Electronic survey	Electronic survey	—	—
8 months	Electronic survey	Electronic survey	Electronic survey	Electronic survey

Abbreviation: CA-1, first-year clinical anesthesia resident.

^a Participants received a guaranteed gift card reward for completing each electronic survey.

^b Dashes indicate not applicable.

^c CA-1 postsurvey was distributed 2 weeks after the event. Support person postsurvey was distributed at the end of the event.

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Table 2. Demographics of the Support Persons

	Treated (n = 33)			Control (n = 14)		
	Total	UK	UNC	Total	UK	UNC
Age, mean (SD)	39.70 (15.71)	37.71 (15.37)	41.16 (16.20)	45.58 (18.02)	40.67 (18.58)	47.22 (18.66)
Relation, ^a n (%)						
Spouse	18 (54.55)	10 (30.30)	8 (24.24)	5 (35.71)	2 (14.29)	3 (21.43)
Child	10 (30.30)	2 (6.06)	8 (24.24)	5 (35.71)	1 (7.14)	4 (28.57)
Friend	3 (9.09)	0 (0.00)	3 (9.09)	1 (7.14)	0 (0.00)	1 (7.14)
Other	2 (6.06)	2 (6.06)	0 (0.00)	1 (7.14)	0 (0.00)	1 (7.14)
NA	0 (0.00)	0 (0.00)	0 (0.00)	2 (14.29)	1 (7.14)	1 (7.14)
Experience, n (%)						
No	21 (63.64)	9 (27.27)	12 (36.36)	7 (50.00)	2 (14.29)	5 (35.71)
Yes	12 (36.36)	5 (15.15)	7 (21.21)	5 (35.71)	1 (7.14)	4 (28.57)
NA	0 (0.00)	0 (0.00)	0 (0.00)	2 (14.29)	1 (7.14)	1 (7.14)
Exposure, ^b n (%)						
No	11 (33.33)	4 (12.12)	7 (21.21)	2 (14.29)	2 (14.29)	3 (21.43)
Yes	8 (24.24)	3 (9.09)	5 (15.15)	5 (35.71)	0 (0.00)	2 (14.29)
NA	2 (6.06)	2 (6.06)	0 (0.00)	2 (14.29)	1 (7.14)	1 (7.14)
MbD ^b	12 (36.36)	5 (15.15)	7 (21.21)	5 (35.71)	1 (7.14)	4 (28.57)
Gender, n (%)						
Male	13 (39.39)	5 (15.15)	8 (24.24)	7 (50.00)	1 (7.14)	6 (42.86)
Female	20 (60.61)	9 (27.27)	11 (33.33)	5 (35.71)	2 (14.29)	3 (21.43)
NA	0 (0.00)	0 (0.00)	0 (0.00)	2 (14.29)	1 (7.14)	1 (7.14)
Distance, ^c n (%)						
Together	18 (54.55)	10 (30.30)	8 (24.24)	4 (28.57)	1 (7.14)	3 (21.43)
<30 min	5 (15.15)	2 (6.06)	3 (9.09)	1 (7.14)	0 (0.00)	1 (7.14)
2-8 h	6 (18.18)	2 (6.06)	4 (12.12)	5 (35.71)	0 (0.00)	5 (35.71)
>8 h	4 (12.12)	0 (0.00)	4 (12.12)	2 (14.29)	2 (14.29)	0 (0.00)
NA	0 (0.00)	0 (0.00)	0 (0.00)	2 (14.29)	1 (7.14)	1 (7.14)

Abbreviations: MbD, missing by design; NA, missing value; UK, University of Kentucky; UNC, University of North Carolina.

^a Spouse = spouse/partner/significant other; child = the resident is my child.

^b Only those who indicated that they had no prior health care provider experience were instructed to answer the question on prior exposure; those who confirmed that they had prior experience are counted toward missing by design.

^c Together = live together; <30 min = live within a 30-minute drive, 2-8 h = live between a 2- and 8-hour drive, >8 h = live beyond an 8-hour drive (but in the United States).

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Table 3. Change in Family Member and Friend Participants' Perceived Understanding of Anesthesia Residents' Work (Pre Versus Post, n = 33)

Item ^a	Mean (SD) [Median]		S ^b	P Value ^c
	Pre	Post		
I understand...				
...what a typical day in the life of an anesthesia resident is like.	1.5 (0.9) [1.0]	2.7 (0.5) [3.0]	138	<.0001
...what anesthesia residents do in the operating room.	1.5 (0.9) [1.0]	2.6 (0.5) [3.0]	126.5	<.0001
...how an intubation is performed.	1.2 (1.2) [1.0]	2.7 (0.5) [3.0]	150	<.0001
...the demands of an anesthesiology resident outside of the operating room.	1.2 (0.9) [1.0]	2.5 (0.7) [3.0]	162.5	<.0001
...that it is common for anesthesia residents to work late.	2.2 (0.8) [3.0]	2.9 (0.4) [3.0]	33	.0010
...that anesthesia residents have to deal with many unexpected situations on the fly.	2.3 (0.9) [3.0]	2.9 (0.2) [3.0]	45.5	.0002
I know how to...				
...support my loved one/friend who is an anesthesia resident.	2.0 (1.0) [2.0]	2.7 (0.5) [3.0]	89	.0002
...reach out to the anesthesiology department for help if needed for my loved one/friend who is an anesthesia resident.	0.4 (0.7) [0.0]	2.6 (0.6) [3.0]	264	<.0001
...access university resources for help if needed for my loved one/friend who is an anesthesia resident.	0.3 (0.7) [0.0]	2.6 (0.6) [3.0]	264	<.0001

^a The answers were given on an ordinal rating scale (0 = *not at all*, 1 = *somewhat*, 2 = *moderately*, and 3 = *mostly*).

^b S = signed rank: Difference (post – pre) = the difference between self-reported perception of the knowledge after and before attending the event.

^c P value based on Wilcoxon signed-rank test of median difference equal to zero.

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Tables continued

Table 4. Support Person Perceived Understanding 8 Months After the Event (Control [n = 14] Versus Treated at 8 Months [n = 18])

Item ^a	Mean (SD) [Median]		P Value ^b
	Control	Treated	
I understand...			
...what a typical day in the life of an anesthesia resident is like.	2.3 (0.8) [2.5]	2.5 (0.7) [3.0]	.4694
...what anesthesia residents do in the operating room.	1.9 (0.9) [2.0]	2.5 (0.6) [3.0]	.0321
...how an intubation is performed.	2.1 (0.8) [2.0]	2.7 (0.5) [3.0]	.0177
...the demands of an anesthesiology resident outside of the operating room.	2.1 (0.9) [2.0]	2.6 (0.6) [3.0]	.1315
...that it is common for anesthesia residents to work late.	2.4 (0.7) [2.5]	2.8 (0.5) [3.0]	.0236
...that anesthesia residents have to deal with many unexpected situations on the fly.	2.5 (0.8) [3.0]	3.0 (0.0) [3.0]	.0028
I know how to...			
...support my loved one/friend who is an anesthesia resident.	2.4 (0.6) [2.5]	2.7 (0.7) [3.0]	.1809
...reach out to the anesthesiology department for help if needed for my loved one/friend who is an anesthesia resident.	0.9 (1.2) [0.0]	2.2 (0.8) [2.0]	.0030
...access university resources for help if needed for my loved one/friend who is an anesthesia resident.	0.9 (1.3) [0.0]	2.2 (0.7) [2.0]	.0058

^a The answers were given on an ordinal rating scale (0 = *not at all*, 1 = *somewhat*, 2 = *moderately*, and 3 = *mostly*).

^b P value based on Mann-Whitney U test.

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Appendix A.

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Appendix A: CA-1 Post Survey

feedback

How much do you feel you learned from this event?

- Nothing
 - A minimal amount
 - A moderate amount
 - A significant amount
-

How much did you enjoy participating in this event?

- Not at all
 - A minimal amount
 - A moderate amount
 - A significant amount
-

How much, if at all, do you think your participation in this event helped to improve your overall wellbeing?

- Not at all
 - A minimal amount
 - A moderate amount
 - A significant amount
-

What did you like most about this event? Please be as specific as possible.

What can be improved? Please be as specific as possible.

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Did your family member(s) or friends attend the event?

- Yes
 No

How much, if at all, do you think your family member or friend's participation in this event will help to improve your overall wellbeing?

- Not at all
 A minimal amount
 A moderate amount
 A significant amount
 I don't know

Did the event stimulate conversation between you and your family/friends in the first 48 hours following the event?

- Yes
 No

What areas were discussed (please mark all that apply)?

- Burnout
 Wellness
 Substance abuse
 Depression
 Stress
 Finances
 Responsibilities of an anesthesiologist
 Procedural aspects of anesthesiology

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Other (please explain)

Overall, do you think the event will help to improve your communication with your family members and friends on work-related issues?

- Yes
 No

Please describe a scenario in which you found your family member or friend's participation in this event helped to improve your communication with him/her. Be specific in your description. If you haven't had such an experience, please reply "None".

Would you recommend this event to a family member, friend or colleague?

- Yes
 No
 I don't know

Other comments

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Think about who you would turn to first to talk about a bad day, help you make big decisions, or share exciting news with. In this survey, we are terming this person as an **emotional support person**.

Did the person that you primarily rely on for **work-related** emotional support participate in the event?

- Yes
 No

After this event,

	Not at all	A little	Mostly	Completely
how much, if at all, do you think this person understands the stresses involved in anesthesia residency training?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
how much, if at all, do you think your wellbeing will improve as the result of this person attending the event?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

After the event,

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I think I will be better understood by this person.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think my relationship with this person will improve.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think it will be easier for me to communicate my work-related issues with this person.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

If this person that you primarily rely on for **work-related** emotional support had participated,

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	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I believe that he/she would have understood the stresses involved in anesthesia residency training.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would have felt better understood by this person.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
it would be easier for me to communicate my work-related issues with this person.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Now think about who you rely on for **general** emotional support. Is the person you rely on for **work-related** emotional support the same person you rely on for **general** emotional support?

- Yes
 No

Did the person that you primarily rely on for **general** emotional support participate the event?

- Yes
 No

After this event,

	Not at all	A little	Mostly	Completely
how much, if at all, do you think that this person understands the stresses involved in anesthesia residency training?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
how much, if at all, do you think your wellbeing will be improved as the result of this person attending the event?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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After this event,

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I think I will be better understood by this person.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think my relationship with this person will improve.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think it will be easier for me to communicate my work-related issues with this person.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

If the person that you primarily rely on for general emotional support had participated,

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I believe that he/she would have understood the stresses involved in anesthesia residency training.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would have felt better understood by this person.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
it would be easier for me to communicate my work-related issues with this person.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Perceived Stress

The questions below ask about your feelings and thoughts during **the last week**. In each case, you will be asked to indicate your response by choosing the answer representing HOW OFTEN you felt or thought a certain way. Although some of the questions are similar, there are differences between them and you should treat each one as a separate question. The best approach is to answer fairly quickly. That is, don't try to count up the number of times you felt a particular way, but rather indicate the response that seems like a reasonable estimate.

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	Never	Almost Never	Sometimes	Fairly Often	Very Often
In the last week, how often have you been upset because of something that happened unexpectedly?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In the last week, how often have you felt that you were unable to control the important things in your life?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In the last week, how often have you felt nervous and "stressed"?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In the last week, how often have you dealt successfully with day to day problems and annoyances?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In the last week, how often have you felt that you were effectively coping with important changes that were occurring in your life?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In the last week, how often have you felt confident about your ability to handle your personal problems?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In the last week, how often have you felt that things were going your way?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In the last week, how often have you found that you could not cope with all the things that you had to do?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In the last week, how often have you been able to control irritations in your life?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In the last week, how often have you felt that you were on top of things?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In the last week, how often have you been angered because of things that happened that were outside of your control?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In the last week, how often have you found yourself thinking about things that you have to accomplish?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In the last week, how often have you been able to control the way you spend your time?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In the last week, how often have you felt difficulties were piling up so high that you could not overcome them?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

resilience

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Please choose the answer that best describes you.

I am able to adapt to change.

- Not true at all
- Rarely true
- Sometimes true
- Often true
- True nearly all of the time

I tend to bounce back after illness or hardship.

- Not true at all
- Rarely true
- Sometimes true
- Often true
- True nearly all of the time

burnout

I feel burned out from my work.

- Never
- Rarely: a few times a year
- Sometimes: a few times a month
- Frequently: a few times a week
- Very frequently: every day

I have become more callous toward people since I started my residency training.

- Never
- Rarely: a few times a year
- Sometimes: a few times a month

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- Frequently: a few times a week
 Very frequently: every day

Personal Support

Please choose the answer that best describes you.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I have some friends upon whom I can rely.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My job keeps me away from my family.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My job keeps me away from my friends.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My job keeps me away from my outside interests.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Other comments

Thank you for completing this survey. We may invite you to participate in future surveys on your well-being in residency. For the purpose of matching your responses in a confidential manner, please answer the following three questions according to the instructions. The answers are not case-sensitive.

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The first 3 letters of the city where you were born (e.g., **DUR** for durham).

The first 3 letters of the make of your first car. (e.g., **FOR** for FORD). Put **NON** if you have never had a car.

The first 2 letters of your mother's first name (e.g., **JE** for Jennifer).

Once you submit this survey, you will be redirected to a one-item survey. The one-item survey will ask for your email address so that we can send you a \$25 Amazon gift card as appreciation for your participation and time spent completing the survey.

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Appendix B. Support Person Postsurvey

We hope you enjoyed the Anesthesia Resident Family Experience Day. We would like to get feedback from you to help us improve our program. Your responses will be anonymous and will not be shared with the anesthesia resident who invited you to participate.

How much, if at all, do you feel you learned from this event?

- Nothing
- A minimal amount
- A moderate amount
- A significant amount

How much, if at all, did you enjoy participating in this event?

- Not at all
- A minimal amount
- A moderate amount
- A significant amount

Would you recommend this event to a family member or friend?

- Yes
- No

What did you like most about this event? Please be as specific as possible.

What can be improved?

What is one specific helpful thing that you learned during this event?

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Please choose the option that best describes you at this moment.

I understand what a typical day in the life of an anesthesia resident is like.	Not at all	Somewhat	Moderately	Mostly
I understand what anesthesia residents do in the operating room.	Not at all	Somewhat	Moderately	Mostly
I understand how an intubation is performed.	Not at all	Somewhat	Moderately	Mostly
I understand the demands of an anesthesia resident outside of the operating room.	Not at all	Somewhat	Moderately	Mostly
I understand it is common for anesthesia residents to work late.	Not at all	Somewhat	Moderately	Mostly
I understand that anesthesia residents have to deal with many unexpected situations on the fly.	Not at all	Somewhat	Moderately	Mostly
I know how to support my loved one/friend who is an anesthesia resident.	Not at all	Somewhat	Moderately	Mostly
I know how to reach out to the anesthesiology department for help if needed for my loved one/friend who is an anesthesia resident.	Not at all	Somewhat	Moderately	Mostly
I know how to access university resources for help if needed for my loved one/friend who is an anesthesia resident.	Not at all	Somewhat	Moderately	Mostly

What is your relationship with the anesthesia resident who invited you to take this survey?

- Spouse/Partner/Significant other
- The anesthesia resident is my parent
- The anesthesia resident is my child
- Friend
- Other. Please specify _____

Do you have personal experience providing health care? (Please skip this question if you have already answered it at the beginning of today's event.)

- Yes. Please specify _____
- No

If your answer is "No", have you had any experiences that gave you exposure to the roles and responsibilities of health care providers?

- Yes. Please specify _____
- No

What is your gender?

- Male
- Female

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What is your age? _____

How far away do you live from the anesthesia resident who invited you to participate in this event?

- We live together
- We live within a 30 minute drive from each other
- We live between a 30-minute and 2-hour drive from each other
- We live between a 2- and 8-hour drive from each other
- We live beyond an 8-hour drive from each other (but I live in the United States)
- I live abroad

Other comments _____

Thank you for completing this survey. For the purpose of matching your responses with the first survey you completed today in a confidential manner, please answer the following 3 questions according to the instructions. The answers are not case-sensitive.

The first 3 letters of the city where you were born (eg, DUR for Durham) _____

The first 3 letters of the make of your first car (eg, FOR for Ford). Put NON if you have never had a car _____

The first 2 letters of your mother's first name (eg, JE for Jennifer) _____

Thank you for completing this survey. We hope you enjoyed this event!