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# Survey of Pediatric Critical Care Fellows on Postresuscitation Debriefing

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<b>Purpose</b>	Current guidelines recommend debriefing following medical resuscitations to improve patient outcomes. The goal of this study was to describe national trends in postresuscitation debriefing practices among pediatric critical care medicine (PCCM) fellows to identify potential gaps in fellow education.
<b>Methods</b>	A 13-item survey was distributed to fellows in all 76 ACGME-accredited PCCM programs in the United States in the spring of 2021. The online survey addressed frequency and timing of debriefings following medical resuscitations, whether formal training is provided, which medical professionals are present, and providers' comfort level leading a debriefing. Results were analyzed using descriptive statistics.
<b>Results</b>	A total of 102 responses (out of a possible N of 536) were gathered from current PCCM fellows. All fellows (100%) reported participation in a medical resuscitation. Only 21% stated that debriefings occurred after every resuscitation event, and 44% did not follow a structured protocol for debriefing. While 66% reported feeling very or somewhat comfortable leading the debriefing, 19% felt either somewhat uncomfortable or very uncomfortable. A vast majority (92%) of participating fellows believed that debriefing would be helpful in improving team member performance during future resuscitations, and 92% expressed interest in learning more about debriefing.
<b>Conclusions</b>	The majority of PCCM fellows do not receive formal training on how to lead a debriefing. Given that 74% of fellows in our study did not feel very comfortable leading a debriefing but almost universally expressed that this practice is useful for provider well-being and performance, there is a clear need for increased incorporation of debriefing training into PCCM curricula across the United States. ( <i>J Patient Cent Res Rev.</i> 2023;10:247-254.)
<b>Keywords</b>	pediatric critical care medicine; fellowship; pediatric intensive care units; resuscitation; surveys; questionnaires; medical education; debriefing

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Among the many challenging situations that confront health care providers, medical resuscitations are uniquely intense, requiring physicians to make critical decisions under significant pressure. Poor outcomes are particularly stressful for all team members involved, with a majority of physicians considering the death of a pediatric patient to be the single most stressful situation they could face at work.<sup>1</sup> Providers may experience strong emotions after an unsuccessful resuscitation, including feelings of failure, inadequacy, self-doubt, disappointment, and sadness.<sup>2,3</sup>

Team members may also experience physical symptoms such as insomnia and fatigue.<sup>3</sup>

Debriefing sessions following medical resuscitations provide an opportunity to reexamine the critical event and identify opportunities for improvement. Simply defined, a debriefing is a reflective discussion after a medical resuscitation, involving 2 or more members of the medical resuscitation team or other supporting staff members. These sessions provide a safe environment to reflect on the event, leading to increased morale, feelings of trust, and shared responsibility among team members.<sup>4-6</sup> Postevent debriefing can benefit both patients and providers alike, as the use of debriefing has been significantly associated with improved cardiopulmonary resuscitation quality and survival, with favorable neurologic outcomes for patients.<sup>7</sup> Debriefing also has been linked to decreased rates of burnout for involved health care providers.<sup>8,9</sup>

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Multiple professional organizations, including the American Heart Association, American Academy of Pediatrics, and European Resuscitation Council, recommend routine use of debriefing in clinical practice as a method of coping with emotional distress and improving performance in future resuscitations.<sup>8,10-12</sup> Despite these recommendations, many institutions do not have formal guidelines and standards on team debriefing after critical events, and rates of participation in debriefing are quite variable.<sup>13</sup> It is possible that debriefing is highly underutilized in training hospitals, with several prior surveys of residents and fellows indicating that formal debriefing and other postevent performance feedback rarely occurs.<sup>14-16</sup> Moreover, when debriefing does occur, there is wide variability in terms of format, timing, and leadership roles.<sup>16,17</sup>

In a 2015 publication, we concluded that a majority of pediatric emergency medicine fellows do not receive formal training on debriefing and may have limited experience in doing so, suggesting a potential knowledge gap for a valuable and necessary skill.<sup>17</sup> We suspected that similar gaps in debriefing training may exist within pediatric critical care medicine (PCCM) fellowship programs as well, as neither pediatric emergency medicine nor PCCM fellowship programs have a standard requirement at this time to provide training on how to lead a debrief.

To our knowledge, national trends in resuscitation debriefing in pediatric critical care settings have not previously been studied in terms of timing, frequency, personnel involved, or leadership roles. It is unknown how much training PCCM fellows typically receive regarding debriefing, if they feel comfortable and prepared to act in a leadership role, or if they find these sessions to be a useful practice. Thus, we surveyed PCCM fellows to assess current postresuscitation debriefing practices and attitudes in pediatric intensive care units (PICUs) across the United States.

## METHODS

A 13-item, anonymous survey was created through Google Forms and distributed via email to the fellowship program directors of all 76 Accreditation Council for Graduate Medical Education (ACGME)-accredited programs in the United States. Program directors were requested to email the electronic survey link to all active PCCM fellows in their respective program. Responses were collected from April 7 through June 15, 2021, with 2 reminder emails sent to program directors during that time. There were 536 PCCM fellows — according to the American Board of Pediatrics — at the time the survey was disseminated (193 first-years, 183 second-years, 160 third-years).<sup>18</sup> The survey used was adapted from our prior survey from 2015 regarding debriefing practices among pediatric emergency medicine fellows, which

was created by a group of emergency medicine physician experts to ensure face validity and piloted by 10 of the pediatric critical care fellows at Children's National Medical Center in Washington, DC.<sup>17</sup>

This study survey explored fellows' experiences with medical resuscitations in the PICU (including the pediatric cardiac intensive care unit, if such a separate unit is present at their institution), the prevalence and nature of debriefings if they took place as well as the fellow's perception of debriefing quality. Medical resuscitation was defined as "the emergent management of a critically ill patient which may or may not result in death." Debriefing was defined as "a reflective discussion after a medical resuscitation generally involving 2 or more members of the medical resuscitation team."

All responses were collected anonymously; however, participants were asked to provide their initials, birth month, and the state in which their fellowship program was located. Their postgraduate year of fellowship training also was recorded. This information was used solely to control for duplicate survey responses. Survey participants were asked to report the number of medical resuscitations they had participated in during their training, frequency, and timing of debriefings, whether formal training was provided, which medical professionals were present, and their personal comfort level in leading a debriefing. For analysis, responses regarding level of comfort in leading a debriefing were assigned numerical values from 1 through 5 (ie, "very comfortable" = 1, "very uncomfortable" = 5). Independent sample *t*-tests and an analysis of variance (ANOVA) were performed to compare mean ratings between fellows of each year of training and to measure degree of association between year of fellowship training and comfort level in leading a debriefing. Level of significance was set at alpha of <0.05. The survey also used a Likert scale to gauge fellows' interest levels in learning how to lead effective debriefings, if they believed formal training in how to do so would be helpful, and the perceived utility of performing debriefing sessions. Since this study was conducted at the height of the COVID-19 pandemic, when social distancing and other safety ordinances altered the way health care workers were allowed to gather and communicate with one another, a survey question was included addressing any perceived impact of the COVID-19 pandemic on debriefing frequency (Online Appendix A).

The institutional review board for Advocate Children's Hospital approved the study contents and methods prior to survey distribution, with implied consent obtained through completion of the study. Data analysis was performed using SPSS Statistics 23.0 (IBM Corporation) software.

## RESULTS

Out of 536 eligible fellows nationwide, 120 responses were collected; however, 12 responses did not include the requested participant identifiers and were therefore removed from analysis, 5 duplicate responses were identified and discarded, and 1 response was discarded because the respondent indicated they were a fourth-year fellow. Of the remaining 102 (out of a possible 536 responses, for a minimum response rate of 19.0%), 38 (37.3%) were first-year fellows, 35 (34.3%) were second-year fellows, and 29 (28.4%) were third-year fellows. All respondents (n=102) reported prior participation in a medical resuscitation at some point during their training but with wide variability in the number of resuscitations in which they had participated (Table 1).

A majority (99 of 102, 97.1%) of fellows participated in at least 1 postresuscitation debriefing, and approximately half of those (58 of 99, 58.6%) reported utilization of a structured debriefing protocol. However, fellows reported a wide variability in the frequency of use of postresuscitation debriefing (Figure 1). More than half the fellows (56.9%) reported that when a debriefing did occur, it took place within 6 hours of the event, and most respondents (90.2%) stated the debriefings occurred within 24 hours of the event. Nearly 12% of fellows reported debriefings taking place more than a day and up to weeks after the event (Figure 2).

Debriefing sessions included a variety of care team members, with a majority including PCCM attending physicians (90.2%) and bedside nurses (90.2%). Other team members present included PCCM co-fellows (73.5%), fellows from other specialties (3.9%), residents, the charge nurse (1%), nurse practitioners (1%), respiratory therapists (63.7%), social workers (16.7%), and chaplains or rabbis (14.7%). Respondents reported that debriefings were most commonly led by PCCM attending physicians (62.1%), PCCM fellows (56.3%), or nurses (15.7%). (As shown in Online Appendix A,

respondents could select more than one option for some survey questions.)

Most respondents reported feeling either very comfortable (26.5%) or somewhat comfortable (39.2%) leading a debriefing. Approximately one-third of respondents (34.3%) felt neutral to very uncomfortable leading a debriefing (Figure 3). ANOVA showed significant between-group variation when comparing fellows of each year of training in regard to comfort level in leading a debrief (F-ratio: 8.72;  $P<0.001$ ). Although no significant difference was found between the comfort level endorsed by second-year and third-year fellows ( $P=0.80$ ), there was a difference when comparing first-years to second-years ( $P=0.004$ ) and first-years to third-years ( $P<0.001$ ), with first-year fellows reporting lower levels of comfort. Additionally, there was an association between level of comfort and number of debriefings encountered, with a higher reported comfort level associated with increased frequency of debriefing ( $r^2=0.221$ ).

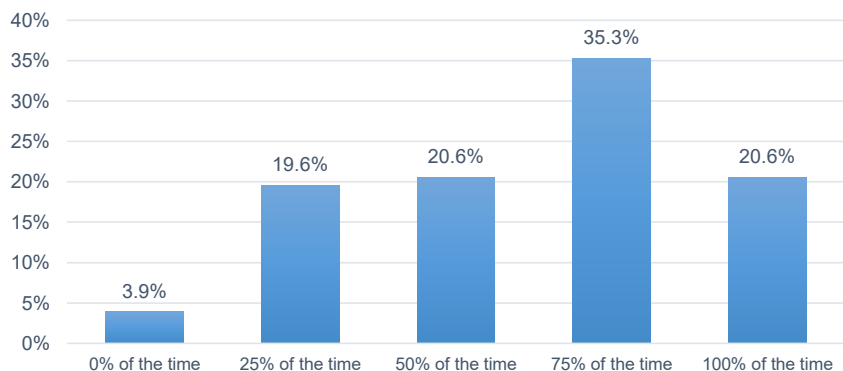
Only 19.6% of respondents (20 of 102) had received formal training on debriefing after a medical resuscitation in the PICU, whereas 92.2% (94 of 102) of respondents expressed interest in wanting to learn more about leading a debriefing (Figure 4). Separately, 92.2% (94 of 102) felt that debriefing is somewhat or very useful for improving future performance of the health care team, with the remaining participants marking “neutral” or “not sure,” and 98.0% (100 of 102) felt that debriefing is useful in promoting the health and emotional well-being of care team members, once again with the remainder marking “neutral” or “not sure” (Figure 5).

Regarding the effect of the COVID-19 pandemic and social distancing practices, 10 (9.8%) individuals reported that the frequency of formal debriefing had decreased, 3 (2.9%) reported an increase, 56 (54.9%) reported no change, and 32 respondents (31.4%) were unsure about changes in frequency.

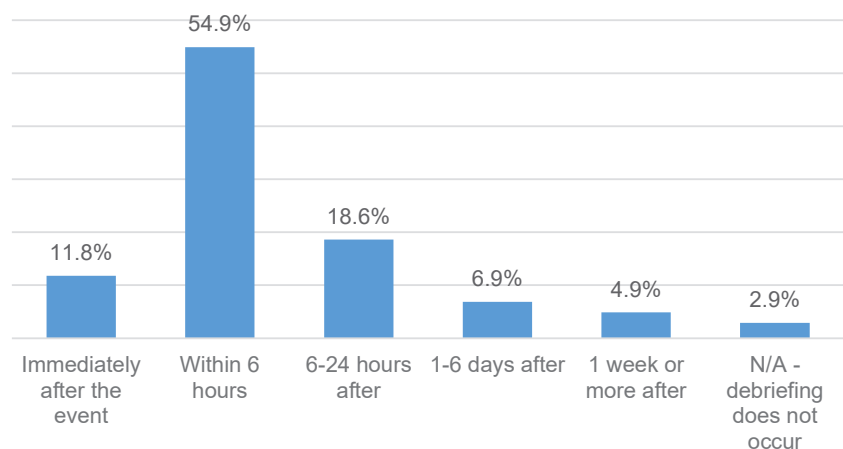
**Table 1.** PCCM Fellow Participation in Medical Resuscitations by Year of Fellowship Training

No. of resuscitations	First-year fellows (n=38)	Second-year fellows (n=35)	Third-year fellows (n=29)	All fellows (n=102)
1–5	15 (39.5%)	–	–	15 (14.7%)
6–10	13 (34.2%)	6 (17.1%)	3 (10.3%)	22 (21.6%)
11–15	6 (15.8%)	10 (28.6%)	6 (20.7%)	22 (21.6%)
16–20	1 (2.6%)	8 (22.9%)	3 (10.3%)	12 (11.8%)
≥20	3 (7.9%)	11 (31.4%)	17 (58.6%)	31 (30.4%)
Not applicable	–	–	–	0

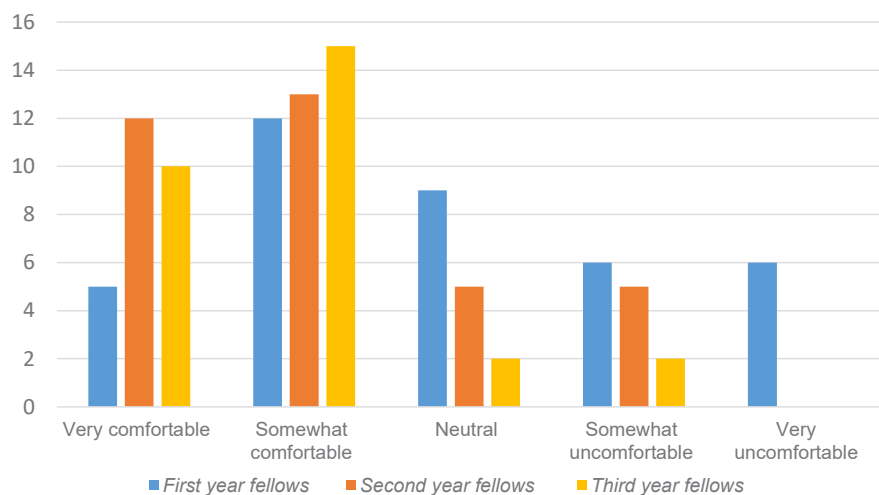
PCCM, pediatric critical care medicine.



**Figure 1.** Pediatric critical care fellow estimates of how often debriefing occurs following medical resuscitations.

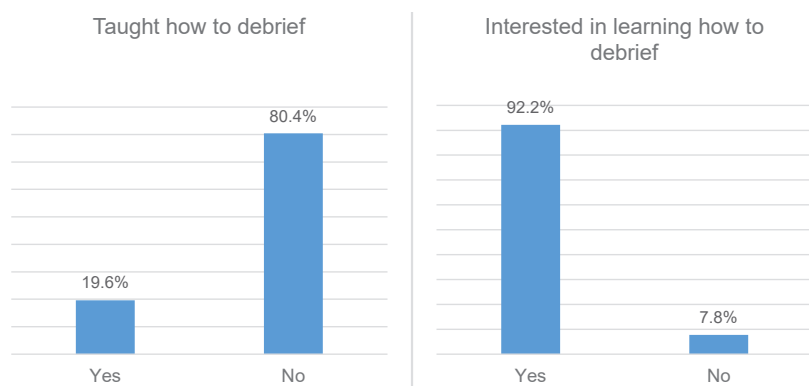


**Figure 2.** Pediatric critical care fellow estimates of time elapsed between a medical resuscitation and debriefing session.

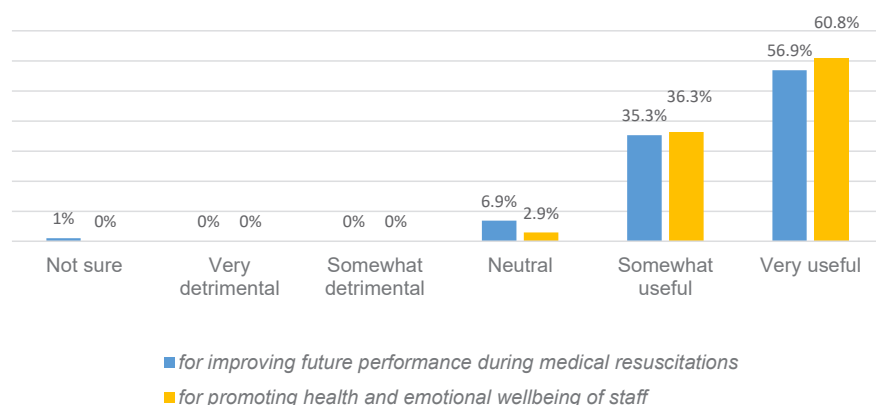


Comfort level	First-year fellows (n=38)	Second-year fellows (n=35)	Third-year fellows (n=29)	All fellows (n=102)
Very comfortable	5 (13.2%)	12 (34.3%)	10 (34.5%)	27 (26.5%)
Somewhat comfortable	12 (31.6%)	13 (37.1%)	15 (51.7%)	40 (39.2%)
Neutral	9 (23.7%)	5 (14.3%)	2 (6.9%)	16 (15.7%)
Somewhat uncomfortable	6 (15.8%)	5 (14.3%)	2 (6.9%)	13 (12.7%)
Very uncomfortable	6 (15.8%)	–	–	6 (5.9%)

**Figure 3.** Pediatric critical care fellows' level of comfort leading debriefing sessions by year of fellowship training.



**Figure 4.** Proportion of pediatric critical care fellows who received debriefing training versus proportion who express interest in learning how to debrief.



**Figure 5.** Pediatric critical care fellows' perceived utility of debriefing for future performance and provider well-being.

## DISCUSSION

This cross-sectional study aimed to characterize debriefings among PCCM fellows in PICUs across the United States. Despite being closely linked with subjective improvements in clinician confidence and leadership skills, debriefing sessions appear to be underutilized in teaching institutions, relative to guideline recommendations, following critical events like cardiac arrest.<sup>14,19,22</sup>

Among the PCCM fellows surveyed, not every medical resuscitation event was followed by a debriefing, with only 20.6% of fellows reporting consistent use at their institution and 3.9% reporting no prior exposure. Additionally, only 19.6% had received instruction on how to lead such a session. Our prior study conducted on the debriefing practices of fellows in pediatric emergency departments showed that up to 30% of all pediatric emergency medicine fellow respondents had never participated in a debriefing session, and the majority had not received training in how to lead one.<sup>17</sup> It seems there is a common theme across subspecialties that fellow exposure to debriefing may be limited in terms of

both exposure and training, despite the fact that this is a recommended and beneficial practice.<sup>8,10-12</sup>

While more than half (56.9%) of the PCCM fellows reported that they were responsible for leading debriefings, a wide range of comfort levels was reported with regard to performing a debriefing session. Even though many respondents reported feeling somewhat or very comfortable leading a debriefing, 92.2% wanted additional formal training on how to lead these sessions. An equally large proportion of respondents felt that that debriefing is valuable for team performance (92.2%) and provider well-being (97.1%). The variability in fellow comfort level, the perceived importance of debriefing as a practice, and the interest indicated by fellows for learning how to lead a debriefing all highlight the need for formal training across institutions.

Interestingly, all 8 participants who did not express interest in learning more about debriefing indicated that they believe debriefing to be a useful practice for either team performance, provider well-being, or both. It is

possible that this reflects prior experience with debriefing, as these 8 participants all indicated that debriefings occur 75%–100% of the time following resuscitations at their institution, and all but 1 indicated feeling “very comfortable” leading a debriefing.

Debriefing is perceived as important by many clinicians across intensive care and emergency department settings, yet many programs do not have formalized guidelines or procedures. Only 56.9% of all respondents reported use of a structured protocol for debriefings, and while timing of debriefing relative to time of critical event was highly variable, 85.3% of debriefings occurred within 24 hours, which is within the recommended timeframe for debriefings. Participants of these sessions were variable but most often included nurses, attending physicians, fellows, residents, and respiratory therapists. It has been recommended that debriefing occur within a few days of the event, that all staff involved should be invited, and that it should be led by a senior clinician with the assistance of an individual trained in addressing psychological issues.<sup>20</sup>

Potential barriers to debriefing contributing to lower rates of this practice include lack of a standardized protocol, uncertainty on who should participate in the debriefing, and the expectation that the team leader during the resuscitation should also lead the debriefing. Having an established model in place may help overcome some of these barriers. For example, novel standardized debriefing format, referred to as Debriefing In Situ Conversation after Emergent Resuscitation Now (DISCERN) was implemented by Mullan et al within a large pediatric emergency department whereafter debriefing rates increased to 88% due to increased accessibility and utility.<sup>4</sup> Another proposed debriefing model, such as the fellow-driven model proposed by Gillen et al, could potentially augment fellow education by consistently placing fellows in the position of facilitator.<sup>15</sup>

Knowing that social distancing practices and other pandemic-related safety measures impacted many aspects of health care delivery and communication strategies between care team members, our study inquired on whether or not the COVID-19 pandemic affected frequency of debriefing. Among survey respondents, 9.8% indicated a decrease in frequency of debriefing during the COVID-19 pandemic. Although this may not be a significant proportion of our survey respondents, methodologies for overcoming the barriers created by this pandemic have been investigated and proposed. During the pandemic, one emergency department implemented a novel tool used for end-of-shift clinical debriefing titled Debriefing In Situ COVID-19 to Encourage Reflection and Plus-Delta in Healthcare After

Shifts End (DISCOVER-PHASE). Rather than relying on patient-based “trigger” events such as cardiac arrests or endotracheal intubation to initiate debriefings, this study utilized a routinely scheduled method in which the shift’s end serves as the trigger for debriefing. This led to an increased rate of debriefings over the 8-week study period, perhaps because it became more routine and less intimidating to team members.<sup>25</sup>

### Limitations

Several limitations were identified for this cross-sectional study. First, we had a response rate of 19.0% as calculated based on the largest possible denominator of survey recipients. Reminder emails were sent to all program directors to distribute the survey to their fellows, however, in order to maintain participant anonymity we did not explicitly ask directors if they had distributed it. It is therefore unknown exactly how many of the then-eligible 536 fellows received the survey. It is possible that the responses of fellows who completed the survey do not fully represent the experiences and opinions of all PCCM fellows.

Second, the survey was sent out from approximately month 9 to month 11 of the academic year. Depending on when fellows completed the survey, this could have influenced the amount of experience fellows had with medical resuscitations or debriefing, particularly for first-year fellows.

Third, this study is subject to recall bias, as fellows were asked to reflect on their experiences throughout their training. It is possible that fellows were unable to accurately remember the details of the medical resuscitations and debriefing sessions they experienced over the course of the preceding 1 to 3 years, subsequently affecting the data we collected. Moreover, the definitions provided to participants for *medical resuscitation* and *debriefing* were broad, leaving them somewhat open to interpretation, potentially leading to overestimation of the incidence of effective or meaningful debriefing.

There may be regional differences in debriefing practices across the United States, however, due to the limited sample size, we could not analyze this issue. Additionally, there may be a correlation between debriefing practices and program size; we did not collect data to address this.

### CONCLUSIONS

Our study found that although pediatric critical care medicine fellows report frequent involvement in medical resuscitations, many report inconsistent use of postresuscitation debriefing. Most fellows find postresuscitation debriefing to be a useful practice, yet

formal training on how to lead a debriefing is not common among PCCM fellowship programs at this time. Despite many fellows feeling comfortable leading a debriefing by their final year of fellowship, the overwhelming majority indicated that they would be interested in receiving such training if given the opportunity. The availability of a structured training program could allow PCCM fellows to hone their skills and confidence in debriefing, potentially leading to increased use of debriefing, future reduction in provider burnout, and improvement in patient outcomes.

### Patient-Friendly Recap

- Several medical societies recommend that care teams hold debriefing sessions after a child patient requires medical resuscitation, both to mentally process the event and to improve quality of care.
- In this cross-sectional study, authors surveyed fellows-in-training of pediatric critical care medicine programs across the United States to assess the debriefing practices currently applied in pediatric intensive care units (PICUs).
- Authors found that debriefings following a medical resuscitation in the PICU do not take place with the consistency reflected by societal guidelines nor with the stated frequency preferred by survey respondents. Most fellows find such debriefings useful in providing future care and to their own well-being.
- More standardized and structured training on how debriefing sessions should be led may be warranted.

### Author Contributions

Study design: Zinns. Data acquisition or analysis: Sather, Brennan, Guo, Havalad. Manuscript drafting: Sather, Guo. Critical revision: Zinns, Brennan, Khan, Havalad.

### Conflicts of Interest

None.

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