THE IMPACT OF A PEDIATRIC CRITICAL INCIDENT SIMULATION ON THE PERCEIVED IMPORTANCE OF AND NEED FOR A CRITICAL INCIDENT STRESS DEBRIEFING PROTOCOL FOR ANESTHESIA PROVIDERS

by

Dené Dainotto

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This is to certify that

[Name of Student]

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on December 12, 2019.

DNP Project Advisor

[Typed Name]

[Signature]

Committee Member 1*

[Typed Name]

[Signature]

Committee Member 2*

[Typed Name]

[Signature]

Committee Member 3*

[Typed Name]

[Signature]

*If applicable
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To the healthcare providers suffering, you are not alone and there is help available. We have to continue fighting for ourselves, as well as for our patients. As Leon Megginson said regarding Charles Darwin’s The Origin of Species: “it is not the most intellectual of the species that survives; it is not the strongest that survives; but the species that survives is the one that is able best to adapt and adjust to the changing environment in which it finds itself”.

Abstract

Critical incidents (CIs), devastating events that exhaust coping mechanisms and cause distress, are likely to affect anesthesia providers during their careers. The purpose of this Doctor of Nursing Practice (DNP) project was to explore the need for and the perceived usefulness of CI stress debriefing (CISD) among anesthesia providers at a children’s hospital in Western New York (WNY) to promote decreased work-related stress and burnout and to improve self-care and professional quality of life. Project objectives were to 1) determine the perceived usefulness of CISD; 2) explore what constitutes a CI; 3) determine perceived CISD barriers; 4) determine the preferred CISD timing; 5) determine what would necessitate CISD; and 6) explore the adequacy of the hospital’s CISD team for the anesthesia providers and design a CISD protocol for these anesthesia providers. Neuman’s Systems Model guided this project. Following University at Buffalo (UB) Institutional Review Board (IRB) approval, 12 anesthesia providers participated in a CI simulation with a pretest and posttest. Participants were introduced to the CISD team at the project site and a follow-up survey was completed one week later. Data analysis consisted of descriptive and inferential statistics. After a pediatric difficult airway CI simulation, participants showed increased tension (t(9) = -3.004, p = 0.015) and decreased esteem. Burnout also increased after the simulation, demonstrating emotional exhaustion. These anesthesia providers expressed a strong desire for CISD and CI simulation implementation. A CISD protocol was designed based on project findings. Future research should focus on a larger, more heterogenous sample.

Keywords: critical incident, critical incident stress debriefing, simulation, critical incident stress management, anesthesia
According to the American Association of Nurse Anesthetists (AANA, 2014), critical incidents (CIs) are inevitable and can be defined as devastating events that exhausts one’s coping mechanisms which may lead to psychological distress and a disruption of normal adaptive mechanisms. It is likely that anesthesia providers will experience at least one CI during their careers (AANA, 2014). Following a CI, healthcare providers often experience decreased work performance, shock, confusion, anger, fatigue, shame, self-doubt, posttraumatic stress, anxiety, depression, thoughts of a career change, an inability to sleep or concentrate, and/or an increase in alcohol consumption (AANA, 2014; Stone, Tyrey, Muckler, & Vacchiano, 2017).

Gazoni, Amato, Malik, and Durieux (2012) surveyed 659 members of the American Society of Anesthesiologists (ASA) and found that 84% of the respondents experienced at least one critical perioperative event during their careers. When these anesthesiologists were questioned about their most memorable catastrophe, 88% needed more time for emotional recovery, 19% stated they never recovered from the event, 67% felt their ability to provide care was compromised within the first four hours after the event, and only 7% of the providers were given time off following the event. According to Gurunathan (2011), anesthesiologists have a 45% higher risk of suicide than internal medicine physicians. This increased risk of suicide is believed to be linked to constant access to lethal and addictive drugs and job-related stress, including advanced clinical skills, responsibility, production pressures, and time constraints (Gurunathan, 2011). A survey of over 3,000 physicians revealed that although emotional distress was prevalent after experiencing an adverse event, emotional support was not always provided (Melynky et al., 2018; Trent et al., 2016). Despite availability of Employee Assistance Programs (EAP), healthcare workers may be reluctant to use EAP due to confidentiality fears or concern that counselors will be unable to understand the event (Edrees, Morlock, & Wu, 2017).
Background and Significance

Gazoni et al. (2012) discussed the increased susceptibility to psychological distress after a CI among anesthesia providers due to the solidarity of anesthesia practice, the infrequency of CIs, and the lack of support for anesthesia providers following a CI. The authors noted that anesthesia programs typically focus on the avoidance and management of crises. The AANA (2014) developed a CI stress management (CISM) model to alleviate the effect of traumatic stress and maintain health for the individuals involved in a CI. The AANA CISM model consists of seven core components including pre-crisis preparation, demobilization and consultation, defusing, critical incident stress debriefing (CISD), one-on-one crisis intervention, family critical incident stress management, and follow-up and treatment referral. CISD, a highly recommended and commonly used component of CISM originally developed for emergency service workers, has shown to be helpful among other healthcare disciplines in providing emotional support, improving mental health, increasing job retention, and increasing productivity following a CI (AANA, 2014). CISD consists of an optional, structured group discussion that is held one to three days after a CI and is made available upon request by any team member (AANA, 2014).

Communication with the chief anesthesiologist and two Certified Registered Nurse Anesthetists (CRNAs) at a children’s hospital in Western New York (WNY) revealed that there is no CI policy or protocol in place specific to anesthesia providers to assist with recovery after a CI. Currently at this facility, debriefing for anesthesia providers following a CI focuses on healthcare system improvements and root cause analyses instead of focusing on support for the staff involved. As part of a Doctor of Nursing Practice (DNP) project at the University at Buffalo (UB), School of Nursing (SON), Sellers (2019) conducted a needs assessment at this hospital exploring the CISM needs of this group of anesthesia providers. This project revealed
that all 15 of the participants voiced the need for CISM, peer support among colleagues played a
critical role in CI debriefing, and that CI simulation training would benefit anesthesia providers
by increasing their knowledge and ability to manage CIs. In response to these findings, the chief
anesthesiologist expressed interest in developing a CI simulation for this group of anesthesia
providers with a pretest posttest design to assess the perceived importance of debriefing and the
need for further support. Furthermore, discussion via email with the Chief Nursing Officer
(CNO) and the manager of volunteer and family services revealed an initiative called Caregivers
Count at this facility. Caregivers Count is based on the CISD model designed by Mitchell and
offers debriefings for hospital staff in conjunction with the Spiritual Care Coordinator. This
discussion further revealed that the operating room (OR) staff has never contacted Caregivers
Count and may not be aware of the support that can be offered. The Chief of Anesthesia, CNO,
manager of Volunteer and Family Services, and Caregivers Count all expressed interest in
exploring the need for CISD for the anesthesia providers, in exploring the development,
implementation, and evaluation of a CI simulation for the anesthesia providers, and in exploring
the development of a CISD protocol for the anesthesia providers.

Purpose and Objectives

As previously stated, no anesthesia specific CI debriefing policy or procedure exists at
this pediatric hospital. The purpose of this DNP project, a pilot study was to explore the need for
CISD and the perceived usefulness of CISD among anesthesia providers working at a children’s
hospital in WNY to promote decreased work-related stress and burnout and to improve self-care
and professional quality of life. Anesthesia providers included anesthesiologists, CRNAs,
anesthesia residents, anesthesia fellows, and anesthesia students. Project objectives were to (1)
determine the perceived usefulness of CISD before and after a CI simulation; (2) explore what
constitutes a CI as perceived by the anesthesia providers; (3) determine perceived barriers of CISD; (4) determine when anesthesia providers would prefer CISD; (5) determine what would necessitate CISD; and (6) explore if the hospital’s CISD team is adequate for the anesthesia providers and design a CISD protocol specifically tailored to these anesthesia providers.

**Theoretical Framework: Neuman’s Systems Model**

The theoretical framework that guided this project was Betty Neuman’s Systems Model. This theory is wellness-oriented, holistic, and focuses on the idea that the goal of nursing is to use preventative measures to prevent instability and provide stability for those who are anticipating or dealing with stress (Meleis, 2012). The Systems Model notes that there are two lines of defense to prevent stressors from causing instability and reaching the core structure. The core structure consists of survival factors, genetic response patterns, strengths and weaknesses of organs, cognitive abilities, ego, and response patterns. The first line of defense is attacked by all stressors and is called the flexible defense; the stable state that fights stressors and the responses to stressors that penetrate through the first line of defense is called the normal defense (Meleis, 2012). Stress responses occur when stressors affect basic structures and energy resources and penetrate through the normal lines of defense and reach the core structure (Meleis, 2012).

According to Neuman’s Systems Model, primary, secondary, and tertiary prevention can be used by the caregiver to maintain or bring stability to the client. Primary prevention is used before stressors occur and focuses on identifying possible stressors and enhancing coping mechanisms. Secondary prevention is used once stressors begin to affect the client and focuses on continuing primary prevention, treatment, supporting the client, and protecting the previously mentioned core structure. Finally, tertiary prevention is used after there is a stress response to provide support and attempt to optimize energy to facilitate stability (Meleis, 2012).
Review of the Literature

A review of the literature was conducted to explore CI, CISD, and CI simulation using the following databases: CINAHL Plus with Full Text and EBSCO, PubMed, Cochrane Database of Systematic Reviews, and Cochrane Central Register of Controlled Trials. A hand search was also conducted examining publications on the AANA website and the references of articles were reviewed for potential inclusion studies. The following keywords and word strings were used singularly and in multiple combinations: critical incident stress debriefing, critical incident stress management, CISM, critical incident, CI, stressful event, adverse event, second victim, deem*ep, and anesthe*. Inclusion criteria included studies written in English and published between the years 2014 to 2019 to ensure that current evidence-based literature was reviewed and summarized for this project. Exclusion criteria included studies in languages other than English, non-human studies, and studies on simulations and debriefings utilized solely for educational purposes.

The literature search revealed a surplus of literature demonstrating that healthcare professionals, including anesthesia providers, regularly suffer from the second victim effect and a decreased quality of professional life. The literature search also revealed that minimal studies have been published assessing the desire or efficacy of CISD in anesthesia providers. Most of the CISD literature was published between the 1990s and early 2000s and focused on emergency workers, emergency room (ER) nurses, intensive care unit (ICU) nurses, and pediatric nurses.

All the selected studies identified the study design, purpose, key variables, population, sample, data collection, limitations, and recommendations. Due to the nature of this topic, all the selected studies had the following limitations: small sample sizes, self-reported data, and a lack of diversity in demographics, and therefore, results that may not be generalizable to all
healthcare providers. As previously mentioned, much of the literature on this topic is not on anesthesia providers, is outdated, and is of low quality. The following presents a summary of the literature review findings.

**Second Victim Effect**

The term *second victim* was created to describe the effects of adverse events or critical incidents on healthcare providers and can be defined as a healthcare provider who becomes traumatized, and therefore victimized, after being involved in an adverse event, medical error, or patient related injury (AANA, 2014; Burlison, Quillivan, Scott, Johnson, & Hoffman, 2016; Winning et al., 2018). Among healthcare providers, a CI can be an event that causes or has potential to cause patient harm, a medical error, a non-error patient safety event, or a near-miss; these events can lead to the second victim effect, which impacts both psychological performance and physical well-being and causes symptoms of posttraumatic stress disorder (PTSD) (Burlison et al., 2016; Stone et al., 2017). Using a self-reported Second Victim Experience and Support Tool (SVEST) completed by 155 nurses involved in patient care, Burlison et al. (2016) found statistically significant correlations with second victim distress, absenteeism, and turnover intentions. These authors concluded that organizational support, especially coworker support, mediated these correlations with statistically significant results.

A cross-sectional online survey of 463 neonatal ICU (NICU) healthcare providers was conducted by Winning et al. (2018) to examine the impact of adverse events on distress and professional quality of life. The authors also studied the role of coworker support. According to Winning et al. (2018), 23% of participants observed an adverse event and 19% were involved in an adverse event within the preceding 12 months. The healthcare providers who observed or were involved in an adverse event had higher levels of anxiety, depression, burnout, and
traumatic stress when compared to those who did not experience an event. Statistically significant results revealed adverse events were associated with increased anxiety and depression when coworkers were thought to be less supportive, but not when they were highly supportive (Winning et al., 2018). The authors concluded that although coworker support reduced emotional distress, the healthcare providers wanted additional support.

**Health in Healthcare Providers**

Melnyk et al. (2018) performed a descriptive study on the physical and mental health, the relationship between health and medical errors, and the perceptions of wellness support and health among 1790 nurses. This study demonstrated that just over 1/2 of the nurses studied had suboptimal physical and mental health with 1/3 to 1/2 of the nurses reporting depression, anxiety, and stress. In addition, nearly half of the nurses studied reported a medical error in the last 5 years and interestingly, nurses with poorer mental or physical health were more likely to have a medical error, with depression being the strongest predictor of medical errors. Moreover, the nurses in this study who felt their wellness was supported in their workplace were twice as likely to have better health and nearly six times more likely to have a high professional quality of life.

**Burnout in Healthcare Providers**

*Burnout* is a state of mental, physical, and emotional exhaustion caused by involvement in demanding situations for a long period of time that can be caused by moral distress (Appleton, Nelson, & Wedlund, 2018). CISM can decrease burnout, compassion fatigue, and moral distress and increase workforce health (Appleton et al., 2018; Clark, Polivka, Zwart, & Sanders, 2019). Appleton et al. (2018) additionally discussed the potential for improved staff satisfaction and patient outcomes and the positive implications for healthcare finances when burnout is reduced.
Simulation

Appleton et al. (2018) implemented an educational pilot project to provide distress debriefings (a form of defusing to assist with coping) to pediatric ICU (PICU) nurses after a needs assessment indicated that 100% of the 57 nurses that participated in their survey suffered from burnout. Distress debriefings were no longer than 20 minutes long, included any team member involved with the patient or the patient’s family at the time of the CI, and consisted of an introduction phase, an exploration phase, and an information phase (Appleton et al., 2018). After the needs assessment, 25 PICU nurses were trained in distress debriefing and participated in a simulated distress debriefing incident. Of the 25 participants, 22 completed a posttest and indicated 100% of the course objectives were met. Appleton et al. (2018) then held four pilot distress debriefings in the PICU. Among the participants, 25% of participants found the distress debriefings to be helpful and 75% found them to be very helpful, 50% felt that distress debriefings were not held soon enough (this was due to limited staffing or CIs during shift change), and all participants felt 20 minutes was the perfect amount of time for debriefings.

CISD

Stone et al. (2017) conducted a descriptive pilot investigation of CRNAs, created a CISM protocol for their institution, and completed a formal educational program with 26 CRNAs utilizing a pretest and a posttest to identify the knowledge and perceptions of CISM, the second victim effect, and the CISM policy available at their institution. The educational intervention increased CRNA knowledge of the second victim effect and coping strategies. The CRNAs in this study felt prompt debriefing is important after a CI and a protocol to manage CIs would be valuable (Stone et al., 2017). These authors discussed the use of CISM and CISD to assist in maintaining or restoring well-being and decreasing PTSD symptoms. CISM policies assist with
healthy coping and allow for high-quality patient care and CISD allows second victims to empathize with one another and discuss their thoughts in a safe environment (Stone et al., 2017).

Clark et al. (2019) conducted a qualitative study of 19 pediatric ER nurses and a nursing assistant. Focus groups met for 63-83 minutes to discuss their current debriefing strategies and to provide suggestions for adapting CISD. This study found that the ER nurses could benefit from optional debriefings held by the end of the shift or within 12-24 hours of the incident with any staff member involved in the CI. The ER nurses preferred positive feedback and reinforcement, critiques to improve care, information about injury mechanism, and no discussion of the emotional aspects of the CI as this could affect their ability to provide care. Clark et al. (2019) additionally created a micro-debriefing process that takes 5-15 minutes when time is limited.

**Literature Review Summary**

Despite the known benefits of CISM, anesthesia departments often lack adequate support for healthcare providers (Stone et al., 2017). The studies in this literature review all noted the necessity of organizational or coworker support to decrease adverse effects after CIs. To provide high quality care and decrease preventable errors, support programs or protocols must be specific to each institution or unit and it is vital to consider psychological safety and to use an appropriate environment (Appleton et al., 2018; Clark et al., 2019; Melnyk et al., 2018; Stone et al., 2017).

**Project Design and Methods**

**Project Design**

The purpose of this DNP project, a pilot study, was to explore the need for CISD and the perceived usefulness of CISD among anesthesia providers working at a children’s hospital in
WNY to promote decreased work-related stress and burnout and to improve self-care and professional quality of life. This study was designed to meet the aforementioned purpose and objectives. The study design consisted of quantitative surveys with some open-ended questions utilizing a pretest and a posttest before and after a CI simulation. The CI simulation was designed as a scripted 15-minute pediatric difficult airway simulation developed by the DNP project student – the principal investigator (PI), and reviewed by an anesthesia provider outside of this facility before implementation. To gain more insight into the desired CISM methods for this group of anesthesia providers, the posttest was followed by an introduction to the roles and availability of Caregivers Count after CIs at this institution. A follow-up survey was emailed to participants one week after the simulation date and remained open for 10 days for participants to complete.

**Project Setting**

The project setting was a children’s hospital in WNY. The project was carried out on November 14th, 2019 in person by the PI during the weekly conference time slot in the anesthesia lounge and an empty OR located in the hospital. The selected project time, date, and location were approved by the chief anesthesiologist. In addition, the nursing staff approved the use of an empty OR to ensure the project would not conflict with the OR schedule. Paper and pen/pencil pretests and posttests were completed on this day in the anesthesia lounge and the simulation was completed in the OR with only the PI and the participating anesthesia providers. Follow-up surveys were emailed to providers one week later and completed via Survey Monkey (https://www.surveymonkey.com) at the providers’ own leisure.
Participants

Participant inclusion criteria included anesthesia providers over the age of 21 working at the children’s hospital. Participants were required to have at least one year of anesthesia experience including time as an anesthesia student or resident. Non-anesthesia providers and anesthesia providers outside of this facility were excluded. At the time of this project there was a total of 47 eligible project participants at this hospital.

Project Methods and Data Collection

The project design was supported by the extensive review of the literature. A date for this project was scheduled by the anesthesia group’s training program advisor, who is responsible for scheduling the weekly conferences, and immediately upon receiving full approval from UB’s IRB (Appendix A), participants were recruited for one week via email and recruitment posters (Appendices B and C, respectively). All anesthesia providers at this facility were sent a recruitment email by the anesthesia secretary at this facility and the student registered nurse anesthetists (SRNAs) completing a rotation at this facility were sent the recruitment email by a UB School of Nursing (SON) staff assistant. Recruitment posters were hung in the anesthesia lounge and near the employee locker rooms. Both the email and poster contained information regarding the project and contact information for the PI.

On the day of the simulation, donuts were provided for the anesthesia staff by the PI. The consent (Appendix D) was discussed, any questions were answered, the consents were signed, and the pretests (Appendix E) were completed. The participants were then given a standard report on the simulated patient and led to the OR. Participants were randomly assigned roles and were split up to work in two groups of four and one group of three for this simulation. In each group, one anesthesia provider acted as the primary anesthesia provider, one anesthesia
provider acted as the assisting anesthesia provider, one anesthesia provider acted as the surgeon, and the fourth anesthesia provider acted as the circulating Registered Nurse (RN). Due to one participant not completing the simulation, one RN role was eliminated, resulting in the group of three. While each group was actively participating in the simulation, the other participants watched until it was their turn to participate and groups were rotated by the PI at predetermined intervals.

A doll was used as the patient in this simulation; this study did not involve the use of a living person as the patient. The simulation was a 2-year-old patient coming to the OR from the ER after a potential chemical exposure and trauma involving a fire. The PI guided the participants through the simulation with answers to questions and provided information such as vital signs and whether or not participants were able to oxygenate the patient. The simulated pediatric patient required ventilatory support and airway attempts progressed to a “can’t intubate, can’t oxygenate” situation that lead to asystole, or cardiopulmonary arrest. The participants in this simulation were unable to resuscitate the child despite their best efforts. Immediately following the simulation, a posttest (Appendix F) was administered and the spiritual care coordinator from Caregivers Count came to speak with the participants regarding the role and availability of Caregivers Count after a CI at this institution. One week after the critical incident simulation and Caregivers Count introduction, a follow-up survey (Appendix G) was emailed to participants via SurveyMonkey (https://www.surveymonkey.com).

Data was analyzed descriptively and inferentially with a repeated measure (within-subjects) analysis of variance (ANOVA), paired t tests, independent t tests, and chi square tests under the guidance of a quantitative methods expert on faculty in the SON at UB. International Business Machines Corporation (IBM) Statistical Package for the Social Sciences (SPSS) 26 was
used for data analysis. Following project implementation and data collection, a CI protocol was designed and tailored for the anesthesia providers. The findings of this DNP project and the recommended CISD protocol were presented to the group of anesthesia providers via a PowerPoint presentation on December 12th, 2019 at the hospital.

**Project Tools**

Surveys were created by the PI to evaluate the need for CISD and the perceived usefulness of CISD among anesthesia providers working at this facility. The surveys were designed based on findings resulting from the review of the literature as well as demographic and CI survey questions created by Sellers (2019). On each survey, the participants were asked the first letter of their high school, the first letter of their middle name, and the last two digits of their cell phone number to create their unique study identity. This study identity was not linked to the names of the participants and was used to track changes within participants over time without linking the names of the participants to their survey responses. Data collected in all three of the surveys included a Likert scale with the tension and self-esteem related outcomes from the abbreviated Profile of Moods States (POMS), a single-item screening measure for provider burnout, CI insights, current coping mechanisms, the desired CISM policy, the desire for simulation, the desire for a CISD policy, and perceived barriers to CISD. Additionally, the pretest contained demographic questions and the follow-up survey inquired about the perceived usefulness of Caregivers Count for anesthesia related CI, and provided an area for comments and suggestions. Full versions of these surveys can be found in Appendices E, F, and G of this paper.

Due to licensing fees and to save time for participants, the single-item screening measure for provider burnout was selected as a replacement for the validated Maslach Burnout Inventory Emotional Exhaustion (MBI:EE) subscale. The single-item screening measure for provider
burnout is easily interpreted, not licensed, and supported as a rapid screening tool (Dolan et al., 2015; Waddimba et al., 2016). Furthermore, this single-item measure was shown to be a reliable and valid method of predicting high levels of emotional exhaustion and as a substitute for both the three item MBI:EE and the one item MBI:EE, which has previously been validated in place of the full MBI:EE (Waddimba et al., 2016).

The abbreviated POMS was utilized in the surveys due to its short completion time and usefulness in assessing mood immediately prior to and after an intervention, and the ability to avoid unnecessary repetition (Bourgeois, LeUnes, & Meyers, 2010; Grove & Prapavessis, 1992). The tension and self-esteem subscales were selected due to the symptoms experienced by providers after CI. The abbreviated POMS, created by Grove and Prapavessis (1992), has been shown to be both consistent and valid (Bourgeois et al., 2010).

**Protection of Human Rights and Ethical Considerations**

The children's hospital of choice has a reciprocal IRB agreement with UB; therefore, following approval from the IRB at UB (Appendix A), participants were recruited via email and recruitment posters. The consent and DNP project were discussed with participants, any questions were answered, and signed consents were obtained before the start of this study (Appendix D). As per the UB IRB agreement, consents were kept in a locked file cabinet drawer in the office of the PI’s DNP Project Advisor with only the PI and project advisor having access to the consents. Consents were destroyed at the completion of this study.

The primary ethical consideration for this DNP project was the potential for emotional discomfort during the completion of the surveys and during the simulation. This research is comparable to everyday work activities for anesthesia providers and it was not expected the participants would require medical or psychological resources, however participants were
monitored continuously by the PI. None of the participants were found to require medical or psychological resources.

Participants were informed that their participation was voluntary and they had the right to refuse any survey questions or withdraw from this project at any time. Participants controlled their survey responses and their right to participate in all portions of this project. Participants were informed their participation, survey answers, and simulation performance would not affect their employment or grades.

All information obtained in the study was kept confidential and deidentified; participants’ names were collected only on the signed consents per IRB agreement. Surveys were linked through a unique study identity that was not linked to individual identity and paper surveys were transcribed electronically and then destroyed. Email addresses were written down by participants for the follow-up study; this paper with email addresses was kept in the PI’s personal locked file cabinet and destroyed once the follow-up surveys were completed. All information kept electronically will be kept on the principal investigator’s personal password protected laptop and personal USB drive. This USB drive will be kept in a locked file cabinet drawer that only the PI has access to. All data will be stored for three years and then destroyed according to the approved IRB protocol.

**Analysis and Results**

The de-identified information from the collected surveys was electronically transcribed into IBM SPSS version 26 by the PI and shared with the quantitative methods expert on faculty in the SON at UB. Data files were exported to Microsoft Excel for ease of chart and graph completion. The survey data files were merged matching on subjects’ unique study identities and frequency distributions were analyzed including the range, minimum, maximum, mean,
median, and mode of each variable. Data was then inspected and cleaned for outliers and missing values. After the dataset was reviewed by both the PI and quantitative methods expert, data was analyzed descriptively and inferentially.

**Demographics, CI Insights, and Stress Management Methods**

Of the 47 eligible anesthesia providers, 25.5% agreed to participate in this study resulting in a total of 12 participants. Table 1 in this paper details the total number and the positions of all the anesthesia providers at this facility and those that completed each survey. Thirty three percent of the participants were CRNAs, 25% were anesthesiologists, 17% were fellows, 17% were SRNAs, and 8% were residents. The participants were 58% female and 42% male. Fifty-eight percent of the total participants were between the ages of 26-35 with 1-5 years of anesthesia experience. For a depiction of demographics including professions, genders, ages, and years of experience in anesthesia see Figures 1, 2, 3, and 4, respectively.

Of those who participated, 92% of the anesthesia providers experienced a CI (n=12). The pretest demonstrated that of the participants who have experienced a CI, 82% felt debriefing would have been helpful after the CI (n=11). The number of participants who felt debriefing would have been helpful after their experienced CI increased to 100% in the follow-up survey (n=7), this included one participant who previously selected no. When participants were asked what constitutes a CI, the top three selections were death of a patient (97%), intraoperative arrest (97%), and causing injury to a patient (83%). A depiction of what constitutes a CI to this group of anesthesia providers can be seen in Figure 5.

The participants were also asked to select activities utilized outside of work to handle work related stress. The top three activities selected by the 12 participants were exercise (97%), support from friends and family (90%), and time spent alone (64%). Figure 6 shows all the
coping mechanisms selected. Fortunately, none of the participants reported the use of alcohol, drugs, or gambling to handle work related stress.

**Descriptive Statistics**

To gain insight into the need and desire for CISD, participants were asked numerous questions, including short answer questions, on their level of burnout, tension and esteem related affects, methods of handling work related stress, and feelings regarding CI, CISD, CISM, and CI simulations. The single-item screening for provider burnout demonstrated variation within participants across the three surveys with burnout increasing for some participants after the CI simulation. In all three surveys, the majority of participants selected “Occasionally I am under stress and I don’t always have as much energy as I once did, but I don’t feel burnt out”. Notably, three participants experienced an increased level of burnout from the pretest to the posttest (after the simulation) selecting “The symptoms of burnout that I am experiencing won’t go away. I think about frustration at work a lot” and “I feel completely burned out and often wonder if I can go on. I am at the point where I may need some changes or may need to seek some sort of help”. In the follow-up survey, less burnout was noted and there were two participants who selected “I enjoy my work, I have no symptoms of burnout”, which was not seen in the pretest and posttest surveys. A depiction of the responses for the single item screening for provider burnout across the three surveys can be found in Figure 7.

Results of the Likert scale assessing the tension and esteem related affects demonstrated stress related changes for particular groups of providers after the CI simulation (Figure 8 and Figure 9, respectively). The average tension related affect for anesthesiologists increased from four in the pretest to 15 in the posttest, and for CRNAs the tension related affect increased from three to 11 from the pretest to the posttest. The tension related affect in the fellows increased
from one to three and in the SRNAs from two to three. The resident had dropped out of the study by this point, but had a tension related affect of two on the pretest.

The esteem related affects demonstrated similar changes with an inverse relationship to the tension related affects. The anesthesiologists experienced an esteem related affect decrease from 16 in the pretest to 12 in the posttest, and the CRNAs experienced a decrease from 17 in the pretest to 11 in the posttest. The fellows and SRNAs again had minimal changes in the esteem related affects with the fellows decreasing from 19 to 18 in the posttest, and the SRNAs had an esteem related affect of 13 in both the surveys. By the follow-up test, the tension and esteem related affects were near pretest values.

Across the three surveys 93% of participants felt they would experience stress after a CI and 71% felt their ability to work would be affected by a CI (n=12). The responses of the participants for this question were consistent across the three surveys. Interestingly, despite 71% of participants feeling their ability to work would be affected, only 45% of participants felt relief for the rest of the shift should be used at this hospital to assist with CISM (Figure 10).

To establish CISD protocol, participants were asked questions regarding their preferred CISM methods. The top CISM methods participants would like to see at this hospital were debriefing (94%), simulations (74%), and peer support programs (53%) (Figure 10). When asked about the use of Caregivers Count, 5 out of the 8 participants in the follow-up survey desired the use of Caregivers Count and 6 out of 8 participants desired debriefing without the use of Caregivers Count. This resulted in 100% of participants in the follow-up desiring debriefing with or without Caregivers Count. Over 70% of participants felt CISD should be held immediately or within 24-48 hours of the event (Figure 11) and 42% of participants felt everyone involved in the CI and either a mental health expert or spiritual/pastoral care should be involved
in the CISD (Figure 12). Further questions revealed 60% of participants would prefer simulations to be held every 3-6 months (Figure 13). One participant preferred simulation every other year in the pretest, but this participant changed their response to yearly on the posttest resulting in 100% of the participants preferring simulations at least once a year in the posttest and follow-up surveys. The most desired simulated situations included cardiopulmonary arrest (30%) and any type of CI (28%) (Figure 14).

**Inferential Statistics**

Statistical analyses were completed to explore the need for and the perceived usefulness of CISD among this group of anesthesia providers. Tension related affects and esteem related affects were collected in each survey and scored out of 24 based on scoring guidelines provided by Grove and Prapavessis (1992). The tension and esteem related affects were separately analyzed across the three surveys with a within subjects one-way repeated measures ANOVA. Both the tension and esteem related affects demonstrated violations of sphericity. The Greenhouse-Geisser corrections were completed and results were statistically insignificant for both the tension and esteem related affects.

Following the one-way repeated measures ANOVA, paired t-tests were completed with the pretest and posttest tension and esteem related affects and the pretest and follow-up survey tension and esteem related affects. The difference between the pretest and posttest tension related affects demonstrated statistical significance (t (9) = -3.004, p = 0.015) (Table 2). This suggests that a CI and/or a CI simulation may increase tension in anesthesia providers. The other paired t tests completed were not statistically significant.

To complete a thorough statistical analysis on the need for and perceived importance of CISD, additional tests were completed. Participants were split into two groups consisting of
professionals (anesthesiologists and CRNAs) and learners (fellows, residents, and SRNAs) for these additional tests due to the aforementioned changes between provider groups. Independent t-tests and chi-square tests were completed on the reported levels of burnout, previous CI experience, if a CI would cause stress, if a CI would affect participants’ ability to work, and the desire for CISD and CI simulation. These tests were not statistically significant.

Discussion

The purpose of this DNP project, a pilot study, was to explore the need for and the perceived usefulness of CISD among anesthesia providers at a children’s hospital in WNY to promote decreased work-related stress and burnout and to improve self-care and professional quality of life. A DNP project by Sellers (2019) found that peer support among colleagues was the best option for this anesthesia group. This was closely followed by CI simulation. Therefore, this DNP project revolved around a holistic approach to exploring CISD with the use of a CI simulation.

The results of this study had minimal statistical significance and a limited sample size, however, it is clear that the participants desire a CISD protocol and would like to experience more simulations. Of the participants in this study, only two also participated in the study of Sellers (2019). While there may have been some turnover between the two studies, both studies had different participants, yet showed similar results regarding the desire for simulation and increased institutional support after CIs.

The changes in esteem and tension related affects from the pretest to the posttest were greater than anticipated. These changes showed that participants may likely experience stress from CIs with real patients. The fact that the established providers (anesthesiologists and CRNAs) experienced a greater increase in tension and a greater decrease in esteem when
compared to the fellows and SRNAs may be due to a less recently experienced CI, a lesser amount of recent CI simulations, and a decreased time spent actively learning crises at the time of the simulation or in the recent past. The fellows and SRNAs may also have experienced less tension due to a decreased feeling of responsibility while in the learning role. Additionally, the changes in the single-item screening measure for provider burnout demonstrate that this group of providers may experience emotional exhaustion after a CI and the level of burnout and emotional exhaustion experienced by providers is variable throughout time.

While many providers agreed CISD and simulation should be utilized for anesthesia providers in this institution, an unexpected finding was that not all providers agreed Caregivers Count should be used for CISD and not all providers felt everyone involved in the CI should be involved in the CISD. It is possible there was confusion regarding the role of Caregivers Count and/or the purpose of CISD. It is also possible that anesthesia providers would prefer to discuss CIs with others who have a deeper understanding of the OR and anesthesia events or feel uncomfortable discussing CIs with those outside of the department.

**Neuman’s Systems Model Pertaining to Simulation and CISD**

Neuman’s Systems Model was a good fit for this DNP project as a theoretical framework because both the model and the project focused on a holistic method of treating the stress response. The lines of defense can be imagined among anesthesia providers as stressors that add up over time or as one big event. For example, a difficult week may become additive until one final stressor causes a stress response in an anesthesia provider. An anesthesia provider may be having family troubles and the week may begin with difficult cases or diagnoses in the children, followed by missed intubations and complications during the cases, and then the loss of a patient
on the OR table may occur. These compounding variables may attack and penetrate the flexible and normal lines of defense and cause a stress response.

Primary prevention can be demonstrated in the previous work of Sellers (2019) and through this DNP project with CI simulation. The project by Sellers (2019) brought awareness of CISM to this group of anesthesia providers. Additionally, CI simulation can help anesthesia providers practice crisis situations and bring awareness to feelings and potential stressors after a CI. Secondary prevention can be demonstrated with the use of CISD. Debriefing is a method of supporting anesthesia providers after a CI and a form of treatment to prevent ill effects of CI and the second victim effect. Tertiary prevention is outside the scope and allotted time to complete this project, but can be established after initial debriefings via follow-ups and continual support and therapy as needed to bring anesthesia providers back to a state of wellness.

**Advanced Practice Nurse (APN) Contribution to Scholarship and Practice**

Nursing doctoral programs prepare graduates for advanced practice nursing (APN) leadership and scientific inquiry roles while focusing on evidence-based practice to advance the profession of nursing (American Association of Colleges of Nursing [AACN], 2006). These programs can grant a research focused doctorate, a Doctor of Philosophy degree (PhD), and/or a clinical practice doctorate, a DNP degree. PhD prepared nurses are scientists and scholars with training focused on scientific content and research while DNP prepared nurses focus on innovative, evidence-based practice and applying research to practice (AACN, 2006). Both PhD and DNP prepared nurses work to advance scholarship and practice. APNs may also educate new generations of nurses after studying teaching methodologies, curriculum development, and program evaluation (AACN, 2006).
APN practice seeks to use a holistic practice perspective and integrates evidence-based knowledge into practice (AACN, 2006). This DNP project addresses APN contribution to scholarship and practice by exploring if CISD among anesthesia providers working in a pediatric hospital setting can improve self-care and professional quality of life by encouraging positive lifestyle changes and decreasing work related stress. This project and the deliverable are supported by current best evidence with the intent that the information herein may be used within a multitude of settings in the future.

**DNP Essentials**

The DNP Essentials outline curricular elements and foundational competencies that must be present in DNP programs (AACN, 2006). Many DNP Essentials were addressed in this project, but the main DNP Essentials addressed included the following: Essential I: *Scientific Underpinnings for Practice*, Essential II: *Organizational and Systems Leadership for Quality Improvement and Systems Thinking*, and Essential VIII: *Advanced Nursing Practice*. Examples of these DNP Essentials include the APN roles of focusing on human behaviors in normal and critical situations; balancing productivity and quality care; developing therapeutic relationships; and designing, implementing, and evaluating practice and therapeutic interventions (AACN, 2006).

Patient satisfaction suffers when RNs experience burnout, and medical errors are higher when nurses have poor mental and physical health (Lewis, Baernholdt, Yan, & Guterbock, 2015). Additionally, according to the 2019 Annual Patient Safety and Quality Industry Outlook by Patient Safety and Quality Healthcare, physician burnout is also associated with decreased patient satisfaction, increased safety incidents, and poor patient care. Improving the
management of CIs and decreasing burnout for anesthesia providers may likely improve patient outcomes.

**Conclusions**

Due to the risk of the second victim effect and potential long-term complications after an anesthesia provider experiences a CI in the perioperative period, this DNP project sought to explore the need for a CISD protocol for anesthesia providers at a children’s hospital in WNY. Within the last year, two UB alumni completed DNP projects focusing on CISM at this facility. Kosior (2019), a Family Nurse Practitioner, investigated the need for a CISM and CISD protocol for the OR nurses and as previously mentioned, Sellers, a CRNA, performed a CISM needs assessment on the anesthesia providers (2019). Both of these DNP projects established a need for CISM in the studied staff. The combined results of these three projects make a well-rounded argument for a CISM and/or a CISD protocol for the OR as a whole at this facility.

**Deliverable**

In the OR, there is a presence of a high level of interdependence and although CIs are rare, they are detrimental when they occur (Gillespie, Gwinner, Chaboyer, & Fairweather, 2013). According to Gillespie et al. (2013), it is vital that the staff in the OR is able to function as a team with open communication and clear expectations. Gillespie et al. (2013) further discussed the need for a culture of safety to allow staff to handle unpredictable, time sensitive concerns.

The participants in this study expressed an interest in both CISD and the use of CI simulation. With the information gathered in this study from participants and after a thorough review of the literature, recommendations have been created for the anesthesia providers at this institution (Appendix H). Due to the necessary cohesiveness and trust that must be present in the
OR, it may be prudent to involve all staff in CI simulation and all involved staff in CISD. Barriers to CISD perceived by the anesthesia providers who participated in this study are presented in Figure 15. The biggest barriers to CISD according to the participants are time constraints (93%), fear of the perceptions of others (83%), and production pressures (73%). Management must take into consideration these perceived barriers when instituting a CISD protocol and continue to provide a culture of safety.

**Strengths**

This DNP project embraced a well-rounded, holistic approach to the needs of anesthesia providers after a CI. In addition, this novel study provided an up to date exploration of CISD, CISM, and simulation needs and preferences in anesthesia providers and provides a more in depth look into how anesthesia providers respond emotionally to CI simulation and potentially CIs. This project may have increased group awareness and self-awareness of the second victim effect after CIs and the potential impact on everyone involved in a CI.

CISM protocols must be designed specifically for each institution or group. This study expanded upon the previous work of Sellers (2019) and with the combined information of both studies, great insights can be seen for this anesthesia group on the needs for CISM and CISD to guide a CISM protocol; according to both studies this anesthesia group could benefit from a CISM protocol. Only two of the twelve participants in this study also participated in the study of Sellers (2019) and therefore when combined, these studies may provide insights on a greater number of providers in this group; however, it is important to recognize there may have been turnover between the studies and different providers working at this hospital during each of the studies.
Limitations

The limitations of this study include a relatively homogeneous sample and a small sample size. A longer than anticipated IRB delay resulted in a short (one week) recruitment time and a limited time for project completion. The simulation and all three surveys in this study were completed in a short time period and that may have increased the number of participant dropouts. Additionally, the focus of this study was anesthesia providers in one anesthesia group. This small, homogeneous sample size may skew data. The results of this study may not be consistent with all anesthesia providers or all OR healthcare providers.

Due to the sensitivity of the topic, a quantitative approach with unidentified subjects was selected. While there were multiple short answer questions, these questions did not fully reveal why participants felt one way or another. A qualitative or mixed methods approach may have been beneficial to discovering a more in depth understanding of the topic under study and may have provided insight regarding how the culture of the hospital could affect participants’ responses. An open conversation may also have helped participants better understand the survey questions and the importance of CISM, and hearing how others felt may have helped participants to be more open and honest.

Future Implications and Recommendations

To improve current research, future studies would benefit from including a large, heterogeneous population. One way to do this may be to have a longer recruitment period and potentially multiple sessions with participants to reach the greatest number of participants. It would also be beneficial to examine this topic over a longer period of time to see what factors influence burnout and other indicators of the second victim effect.
Future studies must also be done on all OR workers and investigate other institutions. CIs affect all of those providing care to a patient and it would be beneficial to investigate the needs and barriers of everyone to develop a protocol that the entire team can benefit from. While it is important to create protocols for each institution individually, this is a poorly studied area in the OR and cross-institutional studies may provide great insights into the needs of providers throughout the country. Once protocols are implemented, it is vital that participants are reassessed to ensure the protocols are effective and to assess for changes that may be necessary in the protocol.
References


Lewis, E. J., Baernholdt, M. B., Yan, G., & Guterbock, T. G. (2015). Relationship of adverse events and support to RN burnout. *Journal of Nursing Care Quality, 30*(2), 144-152. doi:10.1097/NCQ.0000000000000084


Table 1

*Professions of Those Invited and the Participants for Each Survey*

<table>
<thead>
<tr>
<th></th>
<th>Anesthesiologists</th>
<th>CRNAs</th>
<th>Fellows</th>
<th>Residents</th>
<th>Students</th>
<th>Total</th>
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</thead>
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<tr>
<td>Invited</td>
<td>26</td>
<td>10</td>
<td>5</td>
<td>4</td>
<td>2</td>
<td>47</td>
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<tr>
<td>Presurvey</td>
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<td>4</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>12</td>
</tr>
<tr>
<td>Postsurvey</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Follow-up</td>
<td>1</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>8</td>
</tr>
</tbody>
</table>
### Table 2

*Results of Pretest and Posttest Tension Related Affect Paired T-Test*

#### Paired Samples Statistics

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>N</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pair 1</td>
<td>2.70</td>
<td>10</td>
<td>2.791</td>
<td>.883</td>
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<tr>
<td></td>
<td></td>
<td>10</td>
<td>6.721</td>
<td>2.125</td>
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</table>

#### Paired Samples Correlations

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<tr>
<th>N</th>
<th>Correlation</th>
<th>Sig.</th>
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<tr>
<td>10</td>
<td>.418</td>
<td>.230</td>
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#### Paired Samples Test

<table>
<thead>
<tr>
<th>Paired Differences</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
<th>Upper</th>
<th>t</th>
<th>df</th>
<th>Sig. (2-tailed)</th>
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</thead>
<tbody>
<tr>
<td>Pair 1 Pretest participant</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>score on tension related</td>
<td>6.106</td>
<td>1.931</td>
<td>-10.168</td>
<td>-1.432</td>
<td>-3.004</td>
<td>9</td>
<td>.015</td>
</tr>
<tr>
<td>posttest participant score</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>on tension related affect</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Related affect</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
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</table>
Figure 1. Participants by Profession (n=12)

Figure 2. Participants by Gender (n=12)
Figure 3. Participants by Age (n=12)

![Pie chart showing age distribution](chart1.png)

Figure 4. Participants by Years of Anesthesia Experience (n=12)

![Pie chart showing experience distribution](chart2.png)
Figure 5. Incidents that Constitute a CI: Average Across Three Surveys (n=12)

<table>
<thead>
<tr>
<th>Type of CI</th>
<th>Percentage of Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Death of a patient</td>
<td>97%</td>
</tr>
<tr>
<td>Intraoperative arrest</td>
<td>97%</td>
</tr>
<tr>
<td>Causing injury to a patient</td>
<td>83%</td>
</tr>
<tr>
<td>Failure to oxygenate</td>
<td>73%</td>
</tr>
<tr>
<td>Injury to patient</td>
<td>62%</td>
</tr>
<tr>
<td>Medication error</td>
<td>60%</td>
</tr>
<tr>
<td>Hemorrhage</td>
<td>58%</td>
</tr>
<tr>
<td>Abuse from another provider</td>
<td>44%</td>
</tr>
<tr>
<td>Failure to intubate</td>
<td>44%</td>
</tr>
<tr>
<td>A child that was abused</td>
<td>44%</td>
</tr>
<tr>
<td>Anaphylaxis</td>
<td>41%</td>
</tr>
<tr>
<td>Missing an intubation</td>
<td>4%</td>
</tr>
<tr>
<td>Disconnect from ventilator</td>
<td>4%</td>
</tr>
</tbody>
</table>

Figure 6. Activities Used Outside of Work to Handle Work Related Stress: Average Across Three Surveys (n=12)

<table>
<thead>
<tr>
<th>Activities to Handle Stress</th>
<th>Percentage of Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excersizing</td>
<td>97%</td>
</tr>
<tr>
<td>Support from friends and family</td>
<td>90%</td>
</tr>
<tr>
<td>Time alone</td>
<td>64%</td>
</tr>
<tr>
<td>Meditation</td>
<td>44%</td>
</tr>
<tr>
<td>Shopping</td>
<td>28%</td>
</tr>
<tr>
<td>Spa services</td>
<td>25%</td>
</tr>
<tr>
<td>Counseling services</td>
<td>21%</td>
</tr>
<tr>
<td>Alcohol</td>
<td>0%</td>
</tr>
<tr>
<td>Recreational drugs</td>
<td>0%</td>
</tr>
<tr>
<td>Gambling</td>
<td>0%</td>
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</tbody>
</table>
Figure 7. Single-Item Screening Measure for Provider Burnout: Results Across Three Surveys (n=12)
Figure 8. Average Tension Related Affect Score by Provider Group per Survey (n=12)

Figure 9. Average Esteem Related Affect Score by Provider Group per Survey (n=12)
Figure 10. Preferred CISM Methods for this Hospital: Averages Across Three Surveys (n=12)

<table>
<thead>
<tr>
<th>CISM Method</th>
<th>Percentage of Selected Choice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Debriefing</td>
<td>94%</td>
</tr>
<tr>
<td>Simulations</td>
<td>74%</td>
</tr>
<tr>
<td>Peer support program</td>
<td>53%</td>
</tr>
<tr>
<td>Counseling sessions</td>
<td>47%</td>
</tr>
<tr>
<td>Relief for the remainder of the shift</td>
<td>45%</td>
</tr>
<tr>
<td>Relief for one week</td>
<td>18%</td>
</tr>
<tr>
<td>Schwartz rounds</td>
<td>16%</td>
</tr>
</tbody>
</table>

Figure 11. Preferred Timing of CISD: Averages Across Three Surveys (n=12)

- Immediately, 53%
- Within one week, 22%
- Within 24-48 hours, 18%
- Immediately and again after 2 days, 7%
Figure 12. Preferred CISD Participants: Averages Across Three Surveys (n=12)

- All involved plus mental health expert or spiritual/pastoral care, 42%
- Anesthesia providers only, 18%
- Mental health expert or spiritual/pastoral care, 15%
- Everyone involved, 25%

Figure 13. Preferred Simulation Frequency: Averages Across Three Surveys (n=12)

- Every 3 months, 49%
- Once a year, 37%
- Every 6 months, 11%
- Every other year, 3%
Figure 14. Preferred Simulated Cases: Averages Across Three Surveys (n=12)

Figure 15. Perceived Barriers to CISD: Averages Across Three Surveys
Appendix A

UB IRB Approval
Dear Dene Dainotto:

On 11/5/2019, the IRB reviewed the following submission:

<table>
<thead>
<tr>
<th>Type of Review:</th>
<th>Initial Study</th>
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<tr>
<td>Title of Study:</td>
<td>THE IMPACT OF A PEDIATRIC CRITICAL INCIDENT SIMULATION ON THE PERCEIVED IMPORTANCE OF AND NEED FOR A CRITICAL INCIDENT STRESS DEBRIEFING PROTOCOL FOR ANESTHESIA PROVIDERS</td>
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<tr>
<td>Investigator:</td>
<td>Dene Dainotto</td>
</tr>
<tr>
<td>IRB ID:</td>
<td>STUDY00003780</td>
</tr>
<tr>
<td>Funding:</td>
<td>None</td>
</tr>
<tr>
<td>Grant ID:</td>
<td>None</td>
</tr>
<tr>
<td>IND, IDE, or HDE:</td>
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<td>Documents Reviewed:</td>
<td>• Dainotto recruitment poster, Category: Recruitment Materials;</td>
</tr>
<tr>
<td></td>
<td>• Dainotto Followup survey, Category: Surveys/Questionnaires;</td>
</tr>
<tr>
<td></td>
<td>• Dainotto HRP503, Category: IRB Protocol;</td>
</tr>
<tr>
<td></td>
<td>• Dainotto HRP 502 written consent, Category: Consent Form;</td>
</tr>
<tr>
<td></td>
<td>• Dainotto recruitment email, Category: Recruitment Materials;</td>
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<td></td>
<td>• Dainotto Pretest survey, Category: Surveys/Questionnaires;</td>
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<tr>
<td></td>
<td>• Dainotto Posttest survey, Category: Surveys/Questionnaires;</td>
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<td>Personnel Changes:</td>
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The IRB approved the study on 11/5/2019. The Modification and Continuing Review study materials for the project referenced above were reviewed and approved by the SUNY University at Buffalo IRB (UBIRB) by Expedited/Non-Committee Review. The IRB has determined that the study is no greater than minimal risk.

The UBIRB is requiring a yearly continuing review update submission to Click IRB to monitor the ongoing status of the study. Before 11/4/2020 or within 30 days of study closure, whichever is earlier, you are to submit a continuing review update.
with required explanations. It is recommended that you submit your continuing review update at least 30 days prior to 11/4/2020.

You can submit a continuing review update by navigating to the active study in Click IRB and selecting ‘Create Modification / CR’. Then, please choose ‘Modification and Continuing Review’ and ‘other parts of the study’ as the Modification Scope. If you are editing study team members, please choose ‘study team members’ as well.

In conducting this study, you are required to follow the requirements listed in the Investigator Manual (HRP-103), which can be found by navigating to the IRB Library within the IRB system.

UBIRB approval is given with the understanding that the most recently approved procedures will be followed and the most recently approved consent documents will be used. If modifications are needed, those changes may not be initiated until such modifications have been submitted to the UBRIR for review and have been granted approval.

As principal investigator for this study involving human participants, you have responsibilities to the SUNY University at Buffalo IRB (UBIRB) as follows:

1. Ensuring that no subjects are enrolled prior to the IRB approval date.

2. Ensuring that the UBRIR is notified of:
   - All reportable information in accordance with the New Information SOP (HRP-024).
   - Project closure/completion by submitting a Continuing Review/Modification submission.

3. Ensuring that the protocol is followed as approved by UBRIR unless a protocol amendment is prospectively approved.

4. Ensuring that changes in research procedures, recruitment or consent processes are not initiated without prior UBRIR review and approval, except where necessary to eliminate apparent immediate hazards to subjects.

5. Ensuring that the study is conducted in compliance with all UBRIR decisions, conditions, and requirements.

6. Bearing responsibility for all actions of the staff and sub-investigators with regard to the protocol.
If you have any questions, please contact the UBIRB at 716-888-4888 or ub-irb@buffalo.edu. Please include the project title and number in all correspondence with the UBIRB.
Appendix B

Recruitment Email
Hello,

My name is Dené Dainotto and I am a senior student in the University at Buffalo’s Doctor of Nursing Practice (DNP) in Nurse Anesthesia program. As part of the requirements for this degree, I am currently recruiting participants for my DNP project entitled “The Impact of a Pediatric Critical Incident Simulation on the Perceived Importance of and Need for a Critical Incident Stress Debriefing Protocol for Anesthesia Providers”.

The purpose of this pilot study is to explore the need for and the perceived usefulness of critical incident stress debriefing (CISD) among anesthesia providers at a children’s hospital in Western New York (WNY) to promote decreased work-related stress and burnout and to improve self-care and professional quality of life.

This study will include the following: a total of three 5-10 minute surveys, a 20-25 minute group simulation, and an introduction to the role and availability of Caregivers Count. This project will take place in an available Oishei Children’s Hospital operating room at 7:30 A.M on Thursday, November 14th, 2019. This project will not involve the use of a live patient. To participate you must meet me in the Oishei anesthesia lounge on this date and be prepared to enter the OR.

After consenting, a presurvey and demographic survey will be completed. Survey questions will include current mood and level of burnout, critical incident insights, current coping mechanisms, and critical incident stress debriefing policy insights. Following the presurvey, a group simulation will be held with all participants in an available operating room. Immediately after the simulation, a postsurvey will be completed with the same information collected in the presurvey. To determine anesthesia providers’ perceptions on the current CISD team available throughout Oishei, participants will be reminded of or introduced to the role and availability of Caregivers Count at Oishei. One week later, you will be emailed a link to the follow-up survey to be completed via SurveyMonkey (https://www.SurveyMonkey.com). You will be asked again for your consent and the survey will be similar to the first two surveys.

You are being asked to voluntarily participate in this pilot study. To participate, you must be an anesthesia provider at Oishei Children’s Hospital over the age of 21. Anesthesia providers include anesthesiologists, certified registered nurse anesthetists, anesthesia fellows, anesthesia students, and anesthesia residents. You must have at least one year of anesthesia experience, including your time as an anesthesia student or resident. You may withdraw your participation at any time without any penalties or repercussions.

Your participation may increase your knowledge and ability to manage critical incidents, enhance your communication and teamwork skills, and increase your knowledge on CISD. Your participation will help us learn more about the need for critical incident stress management and debriefing in anesthesia providers. There are no foreseeable risks involved in participating in this DNP project other than those encountered daily as an anesthesia provider, including emotional discomfort.

Thank you for considering taking part in this project. Please contact me at dainotto@buffalo.edu if you have any questions or concerns.

Sincerely,

Dené Dainotto, RN, BS, SRNA
Appendix C

Recruitment Poster
ATTENTION
ALL
ANESTHESIA PROVIDERS

The Impact of a Pediatric Critical Incident Simulation on the Perceived Importance of a Critical Incident Stress Debriefing Protocol for Anesthesia Providers

When: November 14th, 2019: Thursday conference, 7:30 A.M. Events: Presurvey, Postsurvey, & Simulation.

Where: To participate you must meet Déni Dainotto on the date above in the anesthesia lounge at Oishei. You must come prepared to enter the OR.

Snacks will be provided during this meeting!

November 21st, 2019: You will be emailed the Follow-up Survey

Any questions or concerns regarding this study may be answered by Déni Dainotto at 716-430-0449 or by email dainotto@buffalo.edu

All anesthesia providers should have received an email with further information on this study. If you did not, please contact Déni Dainotto via the above contact information.

This pilot study consists of three surveys requiring 5-10 minutes each to complete and participation in a critical incident simulation.

Participation is voluntary. Your employment and/or grades will not be affected by your decision to participate, your performance during the simulation, or your survey answers. Withdrawal is permitted at any time.
Appendix D

Consent
Title of research study: THE IMPACT OF A PEDIATRIC CRITICAL INCIDENT SIMULATION ON THE PERCEIVED IMPORTANCE OF AND NEED FOR A CRITICAL INCIDENT STRESS DEBRIEFING PROTOCOL FOR ANESTHESIA PROVIDERS
STUDY00003780
Version Date: 11/1/2019
Investigator: Dené Dainotto

Key Information: The following is a short summary of this study to help you decide whether or not to be a part of this study. More detailed information is listed later on in this form.

Why am I being invited to take part in a research study?
You are being invited to take part in a research study because you are an anesthesiologist, a certified registered nurse anesthetist, or an anesthesia fellow, resident, or student over the age of 21 with at least 1 year of experience providing anesthesia, including time as an anesthesia student or resident.

What should I know about a research study?
Someone will explain this research study to you.
Whether or not you take part is up to you.
You can choose not to take part.
You can agree to take part and later change your mind.
Your decision will not be held against you.
You can ask all the questions you want before you decide.

Why is this research being done?
Most anesthesia providers will experience at least one critical perioperative event during their careers. A critical incident may cause healthcare providers to experience psychological distress. Anesthesia providers are especially susceptible to psychological distress after a critical incident due to the infrequency of critical incidents, a lack of support following critical incidents, the solidarity of anesthesia practice, and education focusing on the avoidance and management of crises.
The purpose of this project is to gain insight into the need for a Critical Incident Stress Debriefing (CISD) protocol for anesthesia providers to decrease work-related stress and burnout and to improve self-care and professional quality of life.

How long will the research last and what will I need to do?
We expect that you will be in this research study for one week or until your post-survey is completed.
You will be asked to complete a total of three 5 to 10-minute surveys and a group critical incident simulation lasting 20-25 minutes. More detailed information about the study procedures can be found under “What happens if I say yes, I want to be in this research?”

Is there any way being in this study could be bad for me?
The foreseeable risks include emotional discomfort. More details on the risks of this study can be found under “Is there any way being in this study could be bad for me? (Detailed Risks)”

Will being in this study help me in any way?
We cannot promise any benefits to you or others from your taking part in this research. However, possible benefits include the opportunity to practice a crisis situation, an increased knowledge and ability to manage critical incidents, enhanced communication and teamwork skills, increased knowledge on critical incident stress debriefing, and an increased understanding of the needs of anesthesia providers following critical incidents.
What happens if I do not want to be in this research?
Participation in research is completely voluntary. You may choose not to enroll in this study. Your alternative to participating in this research study is to not participate. Refusal to participate will involve no penalty or loss of benefits to which the subject is otherwise entitled.

Detailed Information: The following is more detailed information about this study in addition to the information listed above.

Who can I talk to?
If you have questions, concerns, or complaints, or think the research has hurt you, talk to the Principal Investigator at any time at 716-430-0449 or dainotto@buffalo.edu. You may also contact the research participant advocate at 716-888-4845 or researchadvocate@buffalo.edu.

This research has been reviewed and approved by an Institutional Review Board (“IRB”). An IRB is a committee that provides ethical and regulatory oversight of research that involves human subjects. You may talk to them at (716) 888-4888 or email ub-irb@buffalo.edu if:

- You have questions about your rights as a participant in this research
- Your questions, concerns, or complaints are not being answered by the research team.
- You cannot reach the research team.
- You want to talk to someone besides the research team.
- You want to get information or provide input about this research.

How many people will be studied?
We expect about 10 to 15 people here will be in this research study.

What happens if I say yes, I want to be in this research?
- This project consists of a total of three 5 to 10-minute surveys and a group pediatric critical incident simulation lasting 20-25 minutes.
- Two of the surveys will be completed via paper and pen/pencil immediately before and after the simulation, respectively. Your email will be collected and not linked to your survey responses in any way for the third survey which will be administered via SurveyMonkey (https://www.surveymonkey.com). This will be sent to your one week after the simulation.
- Survey questions include information on demographics, current mood and level of burnout, critical incident insights, coping mechanisms, and critical incident stress debriefing policy insights.
- The simulation will occur at 07:30-08:30 A.M. on November 14th, 2019 at Oishei Children’s Hospital in the anesthesia department lounge on the 3rd floor of the Conventus building, Suite K-3502. This is the room typically used for Thursday morning lectures/meetings.
- This simulation is designed to be as realistic as possible. Therefore, you will receive a standard medical report on the simulated patient from the principal investigator while in the anesthesia lounge. You will receive information on the current situation, background, and assessment.
- After report is received, all participants will be escorted to a vacant operating room.
- Because a doll will be used for this simulation and you will not be caring for a living person, the principal investigator of this study will guide you through the simulation and provide information regarding the patient’s status and the effects of your interventions throughout the simulation.
- All the participating anesthesia providers will be in the operating room at the same time to participate in this simulation. You are asked not to disclose who participated or discuss the performance of others.
- You will be broken up into groups of four or five anesthesia providers and the other providers will be in the operating room, awaiting their turn, but not actively participating until it is their turn.
- In each group one person will act as the anesthesia provider, one will act as the assisting anesthesia provider, one will act as the surgeon, and the other will act as the registered nurse in the operating room. In groups of fives anesthesia providers, the fifth will act as an additional surgeon.
- Following the simulation and second survey, you will be introduced to the role and availability of Caregivers Count at Oishei to determine perceptions on the current CISD team available.
- All collected data will be secured in a locked file cabinet and a password protected computer. Consents will not be linked to your survey responses in any way and will be destroyed at this study’s completion.
What happens if I say yes, but I change my mind later?
You may leave the research at any time, your decision to leave will not be held against you.

Is there any way being in this study could be bad for me? (Detailed Risks)
The foreseeable risks include emotional discomfort experienced with some of the survey questions about critical incidents and activities used outside of work to decrease work related stress. Emotional discomfort may also be experienced during the critical incident simulation. If you are experiencing excessive discomfort at any point you may skip any survey questions or withdraw from the study at any time.

What happens to the information collected for the research?
Efforts will be made to limit the use and disclosure of your personal information, including research study and medical or education records, to people who have a need to review this information. We cannot promise complete secrecy. Organizations that may inspect and copy your information include the IRB and other representatives of this organization.

Again, you are asked not to disclose who participated in this study.
This consent is the only document linking your name to the research. Your survey responses will not be linked to your name or identity. Your email addresses will be destroyed after the follow-up survey is completed and consents will be destroyed at the completion of this study. Furthermore, if the results are published and/or presented in any public forums, your identity will not be disclosed. Any of your information collected as part of this research, including deidentified information, will not be used or distributed for future research studies.

Signature Block for Capable Adult
Your signature documents your permission to take part in this research. By signing this form you are not waiving any of your legal rights, including the right to seek compensation for injury related to negligence or misconduct of those involved in the research.

Signature of subject

Date

Printed name of subject

Signature of person obtaining consent

Date

Printed name of person obtaining consent
Appendix E

Demographics and Critical Incident Pretest Survey
Demographics

To allow your survey responses to be linked over time while maintaining anonymity, please create your unique study identity by answering the following:

What is the first letter of your high school? ______

What is the first letter of your middle name? ______

What are the last two digits of your cellphone number? ______

1. What is your gender?
   - Male
   - Female
2. What is your current age?
   - 20-25 years old
   - 26-30 years old
   - 31-35 years old
   - 36-40 years old
   - 41-45 years old
   - 46-50 years old
   - 51-55 years old
   - 56-60 years old
   - 61-65 years old
   - Greater than 65 years old
3. What is your position?
   - Attending anesthesiologist
   - Certified Registered Nurse Anesthetist
   - Fellow
   - Resident
   - Student Registered Nurse Anesthetist
   - Other: __________
4. How many years have you been an anesthesia provider?
   - Less than 1 year
   - 1-5 years
   - 6-10 years
   - 11-15 years
   - 16-20 years
   - 21-25 years
   - Over 25 years
5. How many total years have you worked at this institution? (for example, if you were an RN here before becoming a CRNA)
   - Less than 1 year
   - 1-5 years
   - 6-10 years
   - 11-15 years
   - 16-20 years
o 21-25 years  
o Over 25 years  
6. In 2018, Cara Sellers DNP, CRNA completed a project at this hospital to assess the perceptions and the need for a critical incident stress management protocol in anesthesia providers. Did you participate in that study?  
o Yes  
o No  

Pretest Survey  

1. For each of the following moods, circle the number that describe your current mood.  

<table>
<thead>
<tr>
<th></th>
<th>Not at all</th>
<th>A little</th>
<th>Moderately</th>
<th>A lot</th>
<th>Extremely</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tense</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Proud</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>On-edge</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Ashamed</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Uneasy</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Restless</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Competent</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Nervous</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Confident</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Anxious</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Satisfied</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Embarrassed</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

2. Overall, based on your definition of burnout, how would you rate your level of burnout?  
o I enjoy my work, I have no symptoms of burnout  
o Occasionally I am under stress and I don’t always have as much energy as I once did, but I don’t feel burned out.  
o I am definitely burning out and have one or more symptoms of burnout, such as physical and emotional exhaustion.  
o The symptoms of burnout that I am experiencing won’t go away. I think about frustration at work a lot.  
o I feel completely burned out and often wonder if I can go on. I am at a point where I may need some changes or may need to seek some sort of help.  

3. According to the American Association of Nurse Anesthetists (AANA, 2014), critical incidents (CI) can be defined as devastating events that exhausts one’s coping mechanisms and may lead to psychological distress and a disruption of normal adaptive mechanisms. 
What type of situation would be considered a critical incident to you? Select all that apply.  
o Missed intubation  
o Failure to intubate  
o Failure to ventilate  
o Hemorrhage
- A child with evidence of abuse
- Death of a patient
- Incorrect medication or dose administered
- Injury to patient during the perioperative period
- Injury to patient as a direct result of your actions
- Abuse from another healthcare provider (physical, emotional, sexual)
- Disconnect from the mechanical ventilator
- Intraoperative cardiac or respiratory arrest
- Anaphylaxis
- Other (please explain):

4. Would a critical incident cause you stress?
   - Yes
   - No

5. Would a critical incident affect your ability to work?
   - Yes
   - No

6. Should critical incident stress debriefing be utilized to help manage stress after critical incidents?
   - Yes
   - No

7. If yes to number 6, please answer the following questions:
   - How soon after the critical incident should debriefing occur?
   - Who would you like to have involved in the debriefing process?

8. Should simulation be utilized to help prepare anesthesia providers for critical incidents?
   - Yes
   - No

9. If yes to number 8, please answer the following questions:
   - How often should simulations be held?
   - What type of scenarios would you like to have simulated?

10. Would you like to see any of the following used in your institution to assist with critical incident stress management? Select all that apply, please STAR the method you feel would be most beneficial.
    - Debriefing
    - Simulation
    - Schwartz rounds
    - Relief from the rest of your shift
    - Relief for one week after your shift
    - Counseling sessions
    - Peer support program
    - Other (please explain)

11. What activities out of work do you use to handle work related stress? (Select as many as you would like, please STAR the method you use the most.)
    - Support from friends and family outside of your work environment
    - Exercise
    - Meditation
    - Counseling services
12. Have you ever experienced a critical incident?
   - Yes
   - No

13. Would a debriefing have helped after this scenario?
   - Yes
   - No
   - I would have preferred a different critical incident stress management technique (please explain)

14. What are the current barriers for anesthesia providers receiving debriefing at this hospital? Select all that apply, please **STAR the selection you feel is the biggest barrier**
   - Time constraints
   - Lack of staffing
   - Managers are not aware of staff needs
   - Fear of the perceptions of others
   - Production pressure
   - Staff not interested
   - Other:
Appendix F

Critical Incident Posttest Survey
Posttest Survey

Please answer the following so your survey responses can be anonymously linked over time:

What is the first letter of your high school? ______
What is the first letter of your middle name? ______
What are the last two digits of your cellphone number? ______

1. For each of the following moods, circle the number that describe your current mood.

<table>
<thead>
<tr>
<th>Mood</th>
<th>Not at all</th>
<th>A little</th>
<th>Moderately</th>
<th>A lot</th>
<th>Extremely</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tense</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Proud</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>On-edge</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Ashamed</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Uneasy</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Restless</td>
<td>0</td>
<td>1</td>
<td>2</td>
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</tr>
<tr>
<td>Competent</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Nervous</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Confident</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Anxious</td>
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</tr>
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<tr>
<td>Embarrassed</td>
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</tbody>
</table>

2. Overall, based on your definition of burnout, how would you rate your level of burnout?
   - I enjoy my work, I have no symptoms of burnout
   - Occasionally I am under stress and I don’t always have as much energy as I once did, but I don’t feel burned out.
   - I am definitely burning out and have one or more symptoms of burnout, such as physical and emotional exhaustion.
   - The symptoms of burnout that I am experiencing won’t go away. I think about frustration at work a lot.
   - I feel completely burned out and often wonder if I can go on. I am at a point where I may need some changes or may need to seek some sort of help.

3. According to the American Association of Nurse Anesthetists (AANA, 2014), critical incidents (CI) can be defined as devastating events that exhausts one’s coping mechanisms and may lead to psychological distress and a disruption of normal adaptive mechanisms.

   What type of situation would be considered a critical incident to you? Select all that apply.
   - Missed intubation
   - Failure to intubate
   - Failure to ventilate
   - Hemorrhage
   - A child with evidence of abuse
   - Death of a patient
o Incorrect medication or dose administered
o Injury to patient during the perioperative period
o Injury to patient as a direct result of your actions
o Abuse from another healthcare provider (physical, emotional, sexual)
o Disconnect from the mechanical ventilator
o Intraoperative cardiac or respiratory arrest
o Anaphylaxis
o Other (please explain):

4. Would a critical incident cause you stress?
o Yes
o No

5. Would a critical incident affect your ability to work?
o Yes
o No

6. Should critical incident stress debriefing be utilized to help manage stress after critical incidents?
o Yes
o No

7. If yes to number 6, please answer the following questions:
o How soon after the critical incident should debriefing occur?
o Who would you like to have involved in the debriefing process?

8. Should simulation be utilized to help prepare anesthesia providers for critical incidents?
o Yes
o No

9. If yes to number 8, please answer the following questions:
o How often should simulations be held?
o What type of scenarios would you like to have simulated?

10. Would you like to see any of the following used in your institution to assist with critical incident stress management? Select all that apply, please STAR the method you feel would be most beneficial.
o Debriefing
o Simulation
o Schwartz rounds
o Relief from the rest of your shift
o Relief for one week after your shift
o Counseling sessions
o Peer support program
o Other (please explain)

11. What activities out of work do you use to handle work related stress? (Select as many as you would like, please STAR the method you use the most.)
o Support from friends and family outside of your work environment
o Exercise
o Meditation
o Counseling services
o Alcohol
o Recreational drug use
12. Have you ever experienced a critical incident?
   - Yes
   - No

13. Would a debriefing have helped after this scenario?
   - Yes
   - No
   - I would have preferred a different critical incident stress management technique (please explain)

14. What are the current barriers for anesthesia providers receiving debriefing at this hospital? *Select all that apply, please STAR the selection you feel is the biggest barrier*
   - Time constraints
   - Lack of staffing
   - Managers are not aware of staff needs
   - Fear of the perceptions of others
   - Production pressure
   - Staff not interested
   - Other: ________________________________
Appendix G

Critical Incident Follow-Up Survey
Follow-Up Survey

Do you agree to continue your participation in the study entitled “The Impact of a Pediatric Critical Incident Simulation on the Perceived Importance of and Need for a Critical Incident Stress Debriefing Protocol for Anesthesia Providers”?  
  o Yes  
  o No

By selecting “Yes” and completing this survey, you are consenting to continue your participation in this study. You may skip any of the survey questions and withdraw your participation at any time.
If you have selected “No”, your participation in this study will end and you are asked to please close this browser window.

Please answer the following so your survey responses can be anonymously linked over time:
What is the first letter of your high school? ______
What is the first letter of your middle name? ______
What are the last two digits of your cellphone number? ______

1. For each of the following moods, circle the number that describe your current mood.

<table>
<thead>
<tr>
<th>Mood</th>
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<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Proud</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
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2. Overall, based on your definition of burnout, how would you rate your level of burnout?
  o I enjoy my work, I have no symptoms of burnout
  o Occasionally I am under stress and I don’t always have as much energy as I once did, but I don’t feel burned out.
  o I am definitely burning out and have one or more symptoms of burnout, such as physical and emotional exhaustion.
  o The symptoms of burnout that I am experiencing won’t go away. I think about frustration at work a lot.
  o I feel completely burned out and often wonder if I can go on. I am at a point where I may need some changes or may need to seek some sort of help.
3. According to the American Association of Nurse Anesthetists (AANA, 2014), critical incidents (CI) can be defined as devastating events that exhausts one’s coping mechanisms and may lead to psychological distress and a disruption of normal adaptive mechanisms.

What type of situation would be considered a critical incident to you? Select all that apply.
- Missed intubation
- Failure to intubate
- Failure to ventilate
- Hemorrhage
- A child with evidence of abuse
- Death of a patient
- Incorrect medication or dose administered
- Injury to patient during the perioperative period
- Injury to patient as a direct result of your actions
- Abuse from another healthcare provider (physical, emotional, sexual)
- Disconnect from the mechanical ventilator
- Intraoperative cardiac or respiratory arrest
- Anaphylaxis
- Other (please explain):

4. Would a critical incident cause you stress?
   - Yes
   - No

5. Would a critical incident affect your ability to work?
   - Yes
   - No

6. Should critical incident stress debriefing be utilized to help manage stress after critical incidents?
   - Yes
   - No

7. If yes to number 6, please answer the following questions:
   - How soon after the critical incident should debriefing occur?
   - Who would you like to have involved in the debriefing process?

8. Should simulation be utilized to help prepare anesthesia providers for critical incidents?
   - Yes
   - No

9. If yes to number 8, please answer the following questions:
   - How often should simulations be held?
   - What type of scenarios would you like to have simulated?

10. Would you like to see any of the following used in your institution to assist with critical incident stress management? Select all that apply, please STAR the method you feel would be most beneficial.
    - Debriefing
    - Simulation
    - Schwartz rounds
    - Relief from the rest of your shift
11. What activities out of work do you use to handle work related stress? (Select as many as you would like, please STAR the method you use the most.)
   - Support from friends and family outside of your work environment
   - Exercise
   - Meditation
   - Counseling services
   - Alcohol
   - Recreational drug use
   - Shopping
   - Gambling
   - Time to yourself
   - Spa (manicure, pedicure, massages, etc.)
   - Shopping
   - Other (please explain)

12. Have you ever experienced a critical incident?
   - Yes
   - No

13. Would a debriefing have helped after a case similar to this scenario?
   - Yes
   - No
   - I would have preferred a different critical incident stress management technique (please explain)

14. What are the current barriers for anesthesia providers receiving debriefing at this hospital? Select all that apply, please STAR the selection you feel is the biggest barrier
   - Time constraints
   - Lack of staffing
   - Managers are not aware of staff needs
   - Fear of the perceptions of others
   - Production pressure
   - Staff not interested
   - Other: ________________________________________

15. Do you feel Caregivers Count would be beneficial for anesthesia providers to utilize after a critical incident?
   - Yes
   - No

Please explain why or why not:
Please leave any comments, suggestions, or concerns here:
Appendix H

Recommended CI Protocol
1. **Pre-Crisis Intervention**

   a. Simulations are to be held every 3 months for *all* operating room staff.
      
      i. It is required all operating room staff completes at least one simulation per year. These will be CI simulations of varying situations and cases.
      
      ii. Focuses will be on teamwork and relaxation techniques during crises.
      
      iii. Education and debriefing will be held after each simulation. Education will include the best evidence-based management of that particular case. Debriefing will include areas of strengths and areas of improvement.

   b. Crisis aids will be implemented and placed in each OR. These aids will be utilized during simulations to provide familiarity and comfort with these aids for all staff.

2. **Acute Crisis Interventions**

   a. Once the patient and crisis are stable, all staff involved in the incident are to take a 15-minute break if feasible.
      
      i. If a break is not feasible during the case, turnover is to be held to allow all staff time to decompress.
      
      ii. If necessary, staff can utilize this time to seek out emotional guidance.
      
      iii. If any staff member is greatly affected and feels they cannot safely continue to work, they are asked to discuss this with the team leader of the day and they will be relieved of their duties for the day.

      1. If this occurs, this staff member should be contacted the same evening by either a coworker or a mental health professional for a wellness check.
b. Critical incident stress debriefing (CISD)

i. Immediately after a CI, the team leader will be responsible for contacting Caregivers Count and discussing the situation. A request for a CISD within 24 hours will be made. It is recommended the staff utilizes Caregivers Count due to the prior experience, training, and knowledge of this team.

1. All staff is to attend this debriefing, but any member has the right to not share their thoughts or feelings. Staff is encouraged to stay, but may leave for any reason, such as if they do not feel they need debriefing or would prefer something more private.

ii. Some staff members may desire CISD with a professional more familiar with their line of work in the OR, therefore, it’s recommended a willing member from each field (a surgeon, an RN, an anesthesia provider, OR technician, etc.) is trained in CISD and available to contact staff within 24 hours after a CI. This can be over a telephone call if necessary.

iii. Caregivers Count utilizes Mitchell’s Model of debriefing. This includes seven phases: introduction, fact phase, thought phase, reaction phase, symptom phase, teaching phase, and re-entry phase. If the staff is interested in a different method of debriefing, this should be introduced to and discussed with all staff to determine which debriefing model is best for this institution.

iv. All providers will be given information on the current resources available for employee support after a CI.
3. **Post-Crisis Intervention**
   
a. One week after the crisis, a team leader or member from Caregivers Count will follow up with all individuals involved in the CI.

b. Staff will be referred to additional counseling services if deemed necessary at any point.

4. **Reassessment of Protocol**
   
a. After 6 months, the implemented protocol should be reassessed via staff surveys and meetings.

b. The protocol should be continually reassessed and updated to meet staff needs.
Appendix I

Project Defense and Information Dissemination Slide Deck
Background
- Anesthesiologists have a 45% higher risk of suicide than internal medicine providers.
- Anesthesia providers have a higher propensity for psychological distress after a critical incident (CI).
- A survey of 639 members of the American Society of Anesthesiologists (ASA) found that 84% of respondents experienced at least one critical perioperative event during their careers.
- Preparing their most memorable catastrophes:
  - 58% of anesthesiologists needed more time for emotional recovery.
  - 19% stated they never recovered from the event.
  - 67% felt their ability to provide care was compromised within the first 4 hours after the event.
  - Only 7% of the providers were given time off.

Defining a Critical Incident and the Significance
- According to the American Association of Nurse Anesthetists (AANA), CIs are inevitable, devastating events that exhaust one’s coping mechanisms and may lead to psychological distress and a disruption of normal adaptive mechanisms.
- CI may lead to a wide array of symptoms including:
  - Shock
  - Confusion
  - Anger
  - Anxiety and/or depression
  - Fatigue
  - Shame
  - Inability to sleep or concentrate
  - Self-Doubt
  - Increase in alcohol consumption

Significance
- Second victims are healthcare providers who become traumatized and retraumatized following adverse events.
- The AANA (2014) discusses the CI stress management (CSM) model consisting of seven core components to alleviate the effects of traumatic stress and maintain health for those involved in CIs.
- The focus of the Critical Incidents Practice (CIP) project is mainly CIs stress debriefing (CISD).
- CISD consists of an optional, structured group discussion held one to three days after a CI and should be available on request by any team member (AANA, 2014).
- CISD was developed for emergency service workers, but has proven to be helpful in the healthcare field to provide emotional support, improve mental health, decrease job-related stress, and increase productivity.
Significance Continued

- Communication with the chief anesthetologist and two Certified Registered Nurse Anesthetists (CRNAs) at a children's hospital in Western New York (WNY) demonstrated there is no current CI policy or protocol specific to anesthesia providers to assist with recovery.
- A needs assessment was done for this group of anesthesia providers in a CNF project by Sokol (2018) showing 15 of the participants demonstrated a need for CI.
- Discussion with the Chief Nursing Officer (CNO) and the manager of Volunteer and Family Services revealed an initiative called Caregivers Court designed to hold debriefings for staff at the hospital in conjunction with the Spiritual Care Coordinator.
  - This discussion revealed that the operating room (OR) staff has never attended Caregivers Court and may not be aware of the support that can be offered.

Project Question

Does being a part of a CI simulation increase the perceived importance of CI protocols for anesthesia providers, anesthesia students, anesthesia residents, and anesthesia fellows at a children’s hospital in WNY?

Project Purpose and Objectives

- The purpose of the CNF project, a pilot study, was to explore the need for CI and the perceived usefulness of CI among anesthesia providers working at a children’s hospital in WNY to decrease work-related stress and burnout and to improve self-care and professional-quality of life.
- Objectives and deliverables:
  1. Determine the perceived usefulness of CI among this group of anesthesia providers before and after a patient difficult airway CI simulation.
  2. Explore what constitutes a CI for this group of anesthesia providers.
  3. Determine the perceived barriers of CI.
  4. Determine if anesthesia providers would utilize CI.
  5. Determine what would necessitate CI, and
  6. Expose if the hospital's CI Team is adequate for the anesthesia providers and design a CI protocol specifically tailored to these anesthesia providers.

Theoretical Framework: Neuman’s Systems Model

- Wellness-oriented, holistic, and focuses on the idea that the goal of nursing is to prevent instability and provide stability for those who are anticipating or dealing with stress (Molnar, 2011).
- Theory consists of a core structure and two lines of defense working to prevent instability.
- Stress responses occur when stresses affect basic structures and energy resources and penetrate through the normal lines of defense and reach the core structure (Bieleke, 2012).
- Primary, secondary, and tertiary prevention can be used by the caregiver to maintain or bring stability to the client (Bieleke, 2012).
- Primary prevention can be demonstrated by the work of Salinas and the CNF project with a CI simulation; secondary prevention can be demonstrated with CI, and tertiary prevention can be demonstrated after a stress response to facilitate stability, e.g. counseling.
Literature Review Process

- A thorough review of the literature was conducted utilizing peer-reviewed databases.
- A manual search was conducted to search the publications on the ANRA website and to scan the references of all related studies for potential inclusion studies.
- Keywords and word strings used during literature search included: critical incident, crisis management, critical incident stress management, critical incident, stressful event, adverse event, second victim, disaster, and anesthetist.
- Inclusion criteria: human studies written in the English language published between 2014 to 2019. Exclusion criteria: studies in languages other than English, conference only studies, and studies on simulations and guidelines that were utilized solely for educational purposes.

Literature Review Summary

- All of the studies noted the necessity of organizations or coworkers support to decrease the emotional impact of adverse events.
- Support programs or protocols must be specific to each institution and unit and must consider psychological safety and use an appropriate environment.
- Anesthesia departments are typically lacking in the support provided (Garme et al., 2017).
- There is an abundance of literature indicating that all healthcare professionals are suffering from the second victim effect and a decreased quality of professional life, but there are minimal studies assessing the degree of efficacy of CISM in anesthesiologists.
- Most of the literature on CISM was published between the 1990s and early 2000s often focusing on emergency workers, ER nurses, ICU nurses, and pediatric nurses.
- All the selected studies had the following limitations: small sample sizes, self-reported data, and a lack of diversity in demographics, and therefore, results may not be generalizable.

Methods and Design

- This CMH project was a pilot study, consisted of a quantitative design with three surveys.
- Permission and patient consent were completed before and after the CISM simulation.
- A 15-minute difficult airway simulation for rotating groups of three to four anesthesiologists provided each with varying roles.
- Simulation consisted of a 2-year patient trauma victim after a potential chemical exposure.
- Providers encountered a “can’t intubate, can’t oxygenate” situation which progressed to arrest.
- After the simulation, participants were introduced to the role and availability of Caregivers Count.
- One week after the simulation and CISM introduction, a follow-up survey was completed via https://www.surveymonkey.com.

Methods and Design Continued

- Setting
  - November 14th, 2019 at a children’s hospital in WNYF in the anesthesia lounge and an empty OR.
  - Approved by chief anesthesiologist and nursing staff.

- Population
  - Inclusion criteria consisted of anesthesiologists over the age of 31 at this facility.
  - All anesthesiologists were invited via email and the use of recruitment posters.

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Analysis and Results

- Descriptive and inferential statistics were completed under the guidance of a quantitative methods expert on staff at UB School of Nursing (SON).
- Data entered into IBM SPSS version 24 by P1 and then analyzed:
  - Three survey data files were merged matching on subjects’ unique study identifiers.
  - Data was exported to Microsoft Excel for ease of chart and graph composition.
  - Frequency distributions were analyzed including range, minimum, maximum, mean, median, and mode of each variable.
  - Data was reported and presented for any outliers and missing values.
  - Data was then analyzed descriptively and inferentially.

Analysis and Results: Demographics, CI Insights, and Stress Management Methods

- Of the 9 eligible anesthesia providers, 25.5% (12 providers) participated in the study.
  - 31% CRNAs, 25% anesthesiologists, 17% fellows, 17% ARNAs, 8% were residents.
  - 50% female, 50% male
  - 50% of participants were between the ages of 20-35 with 1-5 years of anesthesia experience.
  - 90% of participants have experienced a CI
    - React 32% felt a devastating event has been helpful after the experienced CIs.
    - Follow-up increased to 100% including one participant who previously declined to.
    - Top three CI's to participants: Patient death 59%, intraoperative arrest 49%, and causing patient harm 63%.
    - Top three stress management methods: Exercise 97%, support from friends and family 75%, and alone time 64%. No participants reported the use of alcohol, drugs, or gambling.

Protection of Human Rights and Ethical Considerations

- Facility of choice has a reciprocal IB agreement with IRB at UB approved this project on 11/8/98.
- Informed, signed consent was obtained by the principal investigator (P1) before the project.
- Participation was voluntary, and participants controlled their responses and their right to participate.
- Grades and employment were not affected. Individual responses and performance are confidential.
  - Unique survey identifiers were created to link surveys and were not linked to individual identities.
  - Consents are kept in a locked file cabinet on campus and will be destroyed at the completion of this study.
  - Surveys were transcribed electronically and then destroyed.
  - Email addresses were written down by participants for the follow-up survey and were destroyed.
  - All information kept will only be kept on the P1’s personal password protected laptop, and personal USB drive for work in a locked cabinet drawer that only P1 has access.
  - All data will be stored for three years and then destroyed according to IRB approved protocol.
- The primary ethical consideration was the potential for emotional distress. Participants were monitored continuously by P1. No participants required medical or psychological resources.
Data Collection and Analysis: Descriptive Statistics

- 95% of participants across the three surveys felt they would experience stress after a CI.
- 71% felt their ability to work would be affected by a CI.
- Despite 71% of participants feeling their ability to work would be affected, only 41% of participants felt relief for the rest of the shift should be used at this institution after a CI.
- The top CISM methods participants would like to see at this institution are defensive (44%), simulations (24%), and peer-support programs (23%).

Data Collection and Analysis: Descriptive Statistics

- 100% of participants in the follow-up desired debriefing with or without Caregivers' Council.
- 5 out of 5 participants in the follow-up survey desired the use of Caregivers' Council.
- Over 70% felt CI would occur immediately or within 24-48 hours of the event.
- 42% felt everyone involved in the incident and either a mental health expert or spiritual/pastoral care should be involved in the CISM.
- 60% of participants would prefer simulations to be held every 3-6 months.
- One participant preferred simulation every other year in the past, but this participant changed their response to yearly on the pretreatment resulting in 100% of the participants preferring simulations at least once a year in the pretreatment and follow-up surveys.
- The most desired simulated situations included cardiopulmonary arrest (35%) and any type of CI (26%).
Data Collection and Analysis: Inferential Statistics

- Inferential statistical tests were completed to explore statistically significant findings regarding the need for and the perceived usefulness of CSD.
- Within-subjects two-way repeated measures ANOVAs:
  - Tension and extensor-related effects were separately analyzed across the three surveys.
  - Both the tension and extensor-related effects demonstrated violations of sphericity.
  - Greenhouse-Geisser corrections were completed and results were statistically insignificant for both the tension and extensor-related effects.

Discussion

- Results had minimal statistical significance and a limited sample size; however, it is clear that the participants desire a CSD protocol and would like to experience more simulations.
- Sellars (2019) and Kloster (2019) demonstrated similar results at this institution.
- The changes in extensor and tension-related effects after the simulation were greater than anticipated.
- Participants may likely experience stress from CIs with near-patients.
- Anesthesiologists and CRNAs may have experienced a greater increase in tension and a greater decrease in extensor due to less CIs simulations and less time spent activity allowing.
- CIs are a stressor and the highest of emotional exhaustion and the level of burnout and emotional exhaustion is variable throughout time.
- An unexpected finding was that not all providers agreed caregivers could be used for CSD in that everyone involved in the CIs should be involved in the CSD.
- These may have been confusion regarding the use of Caregiver Count or CSD.
- Providers may prefer to discuss CIs with others who understand this OR and anesthesia.

Conclusions: Delieverable

- The participants expressed an interest in both CSD and the use of CI simulation. Recommendations for a protocol have been created based on the findings in the CINP project and a thorough review of the literature.
- In the OR, there is a high level of interdependence and although CIs are rare, they are detrimental when they occur. It is vital that the OR staff is able to function with open communication and clear expectations in a culture of safety as they are able to handle unpredictable and time-sensitive concerns (Gillepsie, Geurts, Chvassler, & Hatheraller, 2013).
- It may be prudent to involve all staff in the CI simulations and all staff involved in the CIs in CSD.
- Participants felt time constraints (55%), the fear of perceptions of others (61%), and predictive pressures (73%) were the biggest barriers to CSD.
- It is important management takes these perceived barriers when instituting a protocol and continue to promote a culture of safety.
Strengths, Limitations, and Recommendations

- **Strengths:**
  - The CRSS project provided an up to date exploration of CRSS, CSM, and simulation needs and preferences in anesthesia providers while embracing a well-rounded holistic approach.
  - Group and self-awareness of the second victim effect after C may have been increased.
  - Expanded upon work of Bitran (2010) and with the combined information in both studies great insights can be seen into the needs of CRSS and CRSD.

- **Limitations:**
  - Heterogeneous, small sample size following a longer than anticipated PPI delay and therefore a very short time for transference and completion.
  - Qualitative or mixed-methods approach may have been beneficial for a more in-depth understanding.

- **Recommendations:**
  - Future studies would benefit from a large heterogeneous population with members of the OR.
  - Protocols must be made specific to each institution, however cross-sectional studies may provide great insights to the needs of providers throughout the country.

Conclusion: Recommendations Summary

1. Prioritize intervention: simulations to be held every 3 months for all staff with a requirement of one simulation per year. Crisis aids should be utilized to provide familiarity and comfort with the aids.
2. Acute crisis intervention: once patient and crisis are stable or the case is completed, all involved staff are to take a 15-min break. If staff feel they cannot safely continue to work, they are asked to discuss this with the team leader and will be relieved.
3. CRSS: immediately after the CI, the team leader will contact Gooniverts Court for a CRI within 24 hours. Gooniverts Court is recommended due to prior experiences with CRSS. All staff involved in a CI are to attend CRSS, but members do not have to speak or play. A member from each profession should be trained in CRSS for those who desire to become involved with the aims of the course.
4. Post-CRSS intervention: one week after the crisis, a team leader or Gooniverts Court member will follow up with individuals involved. Staff can be referred to additional counseling services if needed.
5. Reassessment of protocol should occur after 6 months. Update protocol to meet staff needs.