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### Design Of An Evidence-Based Second Victim Curriculum For Nurse Anesthetists

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DESIGN OF AN EVIDENCE-BASED SECOND VICTIM CURRICULUM  
FOR NURSE ANESTHETISTS

Submitted to the Faculty  
Yale University School of Nursing

In Partial Fulfillment  
of the Requirements for the Degree  
Doctor of Nursing Practice

Regina Daniels

May 15, 2015

The capstone is accepted in partial fulfillment of the requirements for the degree Doctor of Nursing Practice.

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May 15, 2015

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Signed: Regina Daniels

May 15, 2015

## **Design of an Evidence-Based Second Victim Curriculum for Nurse Anesthetists**

### **Introduction**

As the first providers of anesthesia in the nineteenth century, CRNAs continue to be the principal providers of anesthesia, administering every type of anesthetic and providing care for every type of surgery and procedure.<sup>1</sup> Nearly 47,000 CRNAs administer more than 34 million of the estimated 40 million anesthetics per year in The United States, accounting for approximately 85% of all anesthetics rendered.<sup>2</sup> Additionally, CRNAs are the sole anesthesia providers in most rural hospitals, and in some states, are the sole anesthesia professionals in nearly 100% of rural facilities.<sup>3</sup>

Historically, CRNAs rendered anesthesia alone in the nineteenth and twentieth centuries because they were the most knowledgeable and experienced pioneers in the field.<sup>4</sup> As entrepreneurs in anesthesia delivery for centuries, CRNAs have endured stressful factors of the evolving profession and adapted to a sundry of situations from the times of open-drop ether to the now more current, advanced, and innovative practice trends. Every day, CRNAs swiftly handle perioperative crises. However, according to Clegg and MacKinnon, little to no training occurs in the actual management of intraoperative morbidities or death including the aftermath of such events.<sup>5</sup> This is alarming because other stressful occupations, such as pilots, firefighters and police officers, have education about the expected stressors and potential catastrophic events that can and do occur.<sup>6</sup>

A 1/200,000 chance exists for a death in the operating room, with many variables that can contribute to negative outcomes.<sup>2</sup> When situations unexpectedly or even expectedly go awry, CRNAs might be prone to the lasting effects of second victimhood. Fellow CRNA colleagues may have apathy or not completely understand the overwhelming natural feelings

related to such tragic events if not having experienced second victim themselves. However, virtually every healthcare provider who experiences harm or loss of the patient (first victim) suffers the sickening realizations of devastation, feels singled out, agonizes and perseverates over the event, hesitates about having discussions with colleagues, questions competence even after years of training and experience, questions potential punishment and job security, fears the patient's anger and the family's scorn, laments about apologizing to the patient and family, and continues to feel tormented.<sup>7,8</sup> All these factors might seem far worse when considering the human aspects of nurse anesthesia and the role of protector and advocate for the patient in the operating room.<sup>9</sup>

### **The Problem and Background**

The literature offers varying definitions of second victim, or the second victim experience. Scott and colleagues defined the second victim as:

Healthcare providers who are involved in an unanticipated adverse patient event, in a medical error and/or a patient related injury and become victimized in the sense that the provider is traumatized by the event. Frequently, these individuals feel personally responsible for the patient outcome. Many feel as though they have failed the patient, second guessing their clinical skills and knowledge base.<sup>10</sup>

Aside from the second victim provider, the first and third victims comprise the triangle of victimhood involved in the catastrophic event. The first victim is the patient and family involved, and the third victim is the organization in which the first and second victims' experiences occur.

Though unnamed and undefined, the second victim concept appeared in the literature in 1954 when two surgeons discussed unexpected operating room catastrophes and the negative

impacts for surgeons and anesthetists.<sup>11</sup> In 1956, another article was published about the horrible memoir of an operating room death with risks attributed to anesthesia and consequences to the anesthetist.<sup>12</sup> In 1990, the term *vicarious traumatization* was coined and introduced as a theory exploring mental health professionals' own experiences of the traumatic psychological events their patients endured.<sup>13</sup>

The concept of second victim is not widely acknowledged in healthcare systems.<sup>14</sup> Nevertheless, the lack of acknowledgement notwithstanding, the phenomenon is not new. Dr. Albert Wu originally coined the term *second victim* in the year 2000 when he, a physician, discussed medical errors made by physicians and the negative impacts suffered.<sup>8</sup> The term second victim is used in the literature to describe not only physicians, but also nurses and other healthcare personnel who experience adverse events with their patients.<sup>7</sup> Currently, there are no published studies concerning second victimhood and nurse anesthetists. Based on the literature, little data are known about the impact of perioperative catastrophes on American anesthesiologists, and the effects of catastrophes on subsequent patient care in the aftermath are poorly understood.<sup>15</sup>

### **Stress in Anesthesia**

In 1981, Edgar Ansel described how being a nurse anesthetist must be one of the more stressful occupations in the entire world.<sup>16</sup> The scope of responsibilities, work schedule, and acute split-second decisions required in anesthesia add to the physical and emotional stress experienced by CRNAs who already live and work in stressful environments.<sup>17</sup> Training reinforces resiliency to work through tough situations and tumultuous cases, but this can become profoundly difficult when the provider is traumatized by a bad event. The bad event could have been years ago, yesterday, or this morning. Perioperative catastrophe covers a

broad spectrum of events and can be multifactorial. The catastrophic event may be the perceived and lived stressful experience that engenders feelings of second victimhood for the affected provider.<sup>6</sup> The experience of losing a patient in the operating room may be exacerbated by assuming care of the next patient and being overwhelmed with worry over what might happen during the next anesthetic course. Operating room deaths have profound and personal effects on nurses, especially nurses who administer anesthesia.<sup>18</sup> This life-altering event may lead to professional paralysis, which may leave a competent practitioner unable to work proficiently or to reach his or her potential because of the fear of re-experiencing another adverse event.<sup>6</sup>

Affected individuals, peers, and departmental leadership may have difficulty realizing the impacts and unintended consequences of the ordeal, but the aftermath of the event can lead to many afflictions. Although human bereavement processes and coping repertoire are part of the life and death cycle, there is a need to succinctly characterize the second victim plight and operationalize second victim support in healthcare systems. The lack of translational and meaningful support systems,<sup>14</sup> at the peer level and above, further contributes to the psychological aftermath experienced such as professional isolation and suicidal tendencies. Because useful, meaningful support for affected CRNAs is not commonly available or understood, the rarely existent support structures may be poorly accessed or not well utilized. Unfortunately, anesthesia providers are at risk of punishing themselves harshly in the wake of perceived failures with memories of the errors for years.<sup>6</sup>

### **Consequences of Second Victim**

The second victim phenomenon is complicated. Not only is the second victim viewing him or herself as a problem, but also the organization (third victim) may not want to deal with

the second victim's issues. The second victim may experience one or more of three outcomes: (1) survive, (2) thrive, or (3) drop out.<sup>6,10</sup> More research could help explore and understand why some practitioners thrive and return to work strong and resilient versus why some lean towards outcomes such as professional paralysis, dropping out, disappearing, and in the worst cases commit suicide.<sup>6</sup> The drop out option is the consequence of the barriers created by severe second victim feelings of guilt, shame, and self-blame, which lead to professional paralysis and the inability to cope in the necessary occupational framework.<sup>6</sup>

Anecdotes, surveys, personal commentaries and literature reviews all constitute the evidence revealing that those involved in medical errors or adverse events suffered post-traumatic type syndromes described as an array of psychological distress symptoms.<sup>8,15,19-31</sup> The associated feelings and symptoms have been described as denial, guilt, decreased performance, anxiety about committing more errors, loss of confidence, vulnerability, substance abuse tendencies, disrupted sleep patterns, need for recovery time, reduced job satisfaction, weakened reputations, permanent scars, increased burnout trajectory, and career exodus. Institutions and individual practitioners must acknowledge second victimhood including the potential acute and downstream personal, professional, and organizational impacts. The issue will not enhance patient safety if not addressed.<sup>14</sup> Social and institutional failings can be mitigated by better understanding the lived experience of the second victim.<sup>6</sup>

## **Data**

National and international incidence rates of second victim experiences vary across the literature. In 2007, The University of Missouri Healthcare (MUHC) system reported that almost one of seven staff members were involved in patient safety events that led to personal problems such as anxiety, depression, and questions about competence.<sup>32</sup> Scott and colleagues

also had data that revealed 68% of MUHC staff reported no institutional support, 30% of healthcare personnel experienced anxiety and/or depression over a period of twelve months related to a patient safety event, and 15% contemplated leaving the chosen profession.<sup>10</sup> Greater than 196,000 healthcare providers are affected by medical errors each year, with 53% of providers reporting no emotional support offered after an adverse medical event and 11% offered support only after specifically requesting it.<sup>27</sup>

More globally, according to a questionnaire survey of Nigerian anesthetists, 86% of the respondents had psychological afflictions from perioperative catastrophes leading to unpleasant memories, depression, sleep disorders, guilt, desire to not return to work, and even physical manifestations such as cardiac dysrhythmias.<sup>24</sup> In Great Britain, 92% of practicing anesthetists experienced an intraoperative death in their career.<sup>33</sup> In 2012, a survey study of anesthesiologists in The United States revealed that 84% of respondents experienced at least one unanticipated death or serious event in their career; 70% experienced guilt, anxiety, and reliving the event; 88% required time off for recovery; 19% never recovered; 12% made career changes; and 67% felt their ability to provide safe anesthesia afterwards was compromised, however 7% reported being given time off.<sup>15</sup>

## **A Solution**

The Institute for Healthcare Improvement (IHI) acknowledges healthcare organizations lack response plans for adverse events,<sup>34</sup> and organizational involvement to set the conditions for success are essential for employees and patient stakeholders. Social support measures ameliorate the short-term and long-term impacts of second victim issues because social support is the most important factor in determining whether a clinician will drop out of practice, survive the experience, and ultimately thrive from the lessons of the lived experience.<sup>6</sup>

Because no currently known education in anesthesia training programs exists and many organizations also lack policies or programs to address second victim, the issue might be approached after the incident if at all or becomes an afterthought.<sup>14</sup> After the incident is not an ideal time to begin thinking about a response or educating the affected provider surrounding the impact. Oftentimes, support might be vague, forgotten, and lack clear processes.<sup>14</sup> The patient safety movement in healthcare is becoming increasingly more aware that to err is human, and evidence-based improvement initiatives are necessary to help providers who experience adverse events.<sup>27</sup> Education is paramount before the implementation of second victim support measures. An evidence-based, strategic education program with clear objectives can set the conditions to successfully build a sound, thoughtful tactical plan in the event of a second victim occurrence.

The quandary is why more CRNAs and anesthesia departments, in general, are not learning about the second victim problem. The solution is an evidence-based curriculum for CRNAs. The curriculum outline was developed with two specific aims:

- (1) To identify content for an educational program on second victim for nurse anesthetists through a systematic review of the scientific literature;
- (2) To validate the content for an education program on second victimhood using a panel of experts on second victim in healthcare.

## **Methodology**

The design of an evidence-based second victim curriculum for CRNAs was conducted between February 7, 2014, through August 9, 2014, and encompassed two steps: (a) a comprehensive literature review and delineation of the content domains, and (b) content validity by an expert panel with content validity analysis. The first step was to identify content

for an educational program, and a table of potential domains was produced through a systematic review of the literature. The review yielded twenty-four articles. The articles were retrieved from medical, patient safety, and health quality journals. The literature on the definition and major components of second victim phenomenon, its prevalence and sequelae among healthcare providers and nurses, and strategies for preventing and addressing second victim effects were systematically reviewed and stratified to identify content for an educational program. Search terms used were “second victim”, “second victim in healthcare”, “second victim in nursing”, “adverse events in healthcare”, “second victim in anesthesia”, “adverse events in anesthesia”, “anesthesia mishaps”, “stress in nurse anesthesia”, “loss of a patient”, “operating room death”, and “critical incident management”. Exclusion criteria included resources that lacked improvement recommendations on how to better acknowledge and address the second victim experience. Search engines utilized included Orbis Yale University Catalog, CINAHL, Pub Med, Ovid, Cochrane Library, EBSCO Databases, and Google Scholar. Resources and support included The Yale University library system and voluntary and confidential collaboration with professional peers and mentors on the second victim topic. The evidence was organized and presented in a table that described the author, journal, place of publication, title, purpose of study, identified content, and level of evidence. The identified content was then written as elements of the educational program, and these were grouped into categories. A curriculum outline was developed based on the review of the literature and stratification of evidence. Six domains were identified as broad categories with specific subdomains under each of the broad categories.

The second step was to validate the content for an education program on second victim using a panel of experts. A five-member expert panel, according to the Yale School of Nursing

Doctor of Nursing Practice program guidelines for expert panel methodology, validated the content identified in step one. The expert panel (Table 1) included doctoral-prepared researchers and clinicians in medicine, nursing (RN and CRNA), and psychology, all with expertise in the second victim phenomenon in healthcare. They were identified through their prominence in the literature, selected with deliberate intention of garnering diverse perspectives, and agreed to serve on the panel. A rating guide was developed for relevance, clarity, and importance. The project committee members reviewed the rating guide and helped develop rating content for the expert panel per the established guidelines. The categories and specific content were then organized into a binary rating guide for relevance and importance for second victim educational goals in nurse anesthesia. A short letter was sent to each of the five participating experts with the curriculum outline and coinciding binary survey form for rating the curriculum content. The experts reviewed and rated the categories and elements for relevance and importance using the developed rating guide and returned the surveys within two weeks. Percent agreement for the categories and elements were calculated. The categories and elements with >78% agreements were judged as evidence-based content. No Institutional Review Board approval was necessary for this project as it was a literature review to design an education program, utilizing professional experts to validate the content. The elements for the education program rated by the experts are presented in Table 2.

## **Results**

The systematic review revealed six broad domains: (1) Define and describe second victim, (2) Second victim risks for nurse anesthetists, (3) Barriers for the second victim, (4) Unintended consequences of second victim, (5) Evidence-based understanding and interventions frameworks, and (6) Support systems. There was 100% agreement on the

relevance and importance of these six domains. This unanimous rating on these domains by the experts underscores its importance and inclusion as basic core content for CRNAs. Within the definition domain, there was 100% agreement on the relevance of the sub-domains but two experts scored the history as low importance. The majority of the sub-domains also were rated 100% relevant, and the remaining ones were rated 80%. Similarly, the majority of the sub-domains (n=15) were rated 100% as high importance, and nine sub-domains were rated 80%. Four sub-domains were rated as low importance. These included: History of second victim, Denham's Five Rights, Scott's Recovery Stages, and Survive/Thrive/Dropout. Expert reviewers recommended that they were rating these sub-domains of low importance only as prioritizing the content if decisions needed to be made to meet time constraints for educational offerings.

## **Discussion**

Although there is no research that specifically addresses second victim phenomena for CRNAs, there is data and literature to support the identification of content for the development of an educational curriculum for CRNAs and SRNAs. The content represents the basics to help increase knowledge on second victim, its consequences, potential interventions to cope, and support systems needed. Five national experts confirmed the evidence and substantiated the importance of preparing CRNAs for the full responsibilities of their role.

Social support expectations by CRNA peers are difficult when didactic content related to stress, burnout,<sup>17</sup> second victim, and coping strategies are not required during nurse anesthesia training or in continuing education offerings. Perhaps such education content should be required. The lack of recognition and response to second victim stands in contrast with other safety-critical disciplines where occupational stress may arise from second victim syndromes.

Air traffic controllers, commercial aviators, firefighters, and law enforcement officers have response programs in place ready to offer support in a second victim critical incident phenomenon.<sup>35,36</sup> The Institute of Medicine (IOM) Report, titled “To Err is Human”, revealed that though medical errors are more common than airline accidents, the public has more concern with safety in the airline industry than the healthcare industry.<sup>37</sup>

Second victim education is beneficial in both research and clinical practice. More research about second victimhood among CRNAs is recommended in exploring educational content even more specific to the population. To date, there are no publications on second victimhood among American CRNAs. Also, there is no standardized program to implement knowledge dissemination about second victim in nurse anesthesia. The second victim curriculum outline design was developed to incorporate domains and sub-domains that reflect the multidimensional impacts of the second victim phenomenon existent in the literature. The second victim curriculum can be used to: (a) educate CRNAs and SRNAs about second victim, (b) acknowledge and address the second victim phenomenon among new graduate and student nurse anesthetists who experience staff, faculty, and preceptor abuse specifically during times when support should be rendered, (c) provide a standard for an evidence-based curriculum guide to construct educational offerings on second victim, (d) start the impetus for interventional studies and measure the effect of educational offerings and implementation plans to promote better understanding of peer and support protocols, and (e) function as part of required content in nurse anesthesia training curriculum. Clinically, the second victim education curriculum can be used as a content guide with the use of all items to determine second victim knowledge in a pre-test and post-test

fashion, and individual items can be examined to determine baseline knowledge and post-intervention knowledge attainment. Ease and accessibility of an available curriculum program fosters the ability for CRNAs and departmental leadership to create educational opportunities without the cumbersome and time-consuming efforts to create such a program from the ground-up. In summary, consensus from the literature and the expert panel support multidimensional knowledge dissemination about second victim.

Therefore, the inclusion of multiple second victim domains as components of an education program was warranted by the literature. Further experimental and translational implementation of the education program would provide additional evidence on its impact of strategic and tactical benefits of second victim support programs across institutions.

## **Conclusion**

This evidence-based project substantiates the need for second victim education programs for current and prospective CRNAs. Downstream development and dissemination of such an educational program across academic and clinical settings have the potential to increase awareness, compassion, empathy, resilience, and initiate development of essential peer support groups within organizations. In addition, this education program has the potential to be generalizable to other healthcare professionals not inclusive to CRNAs. The importance of this project is directly related to the need for CRNAs to possess knowledge about the psychological resources to cope with the inexplicable professional stress and moral distress in order to survive perioperative catastrophes and deaths emotionally, physically, and professionally. Outcomes from this translational educational impetus can also be used to help healthcare organizations create supportive environments for their employees and patients.

**Table 1. Expert Panel Members' Biographies.**

Sidney Dekker, PhD, is a psychologist and professor at Griffith University in Brisbane, Australia, where he runs the *Safety Science Innovation Lab*. He has won worldwide acclaim for his groundbreaking work in human factors and safety, and is the best-selling author of the book *Second Victim*.

Susan Scott, PhD, RN, is the manager of Patient Safety and Risk Management at University of Missouri Health Care. She is director of the University of Missouri Health Care System's peer support network, the forYOU Team and has authored numerous publications on second victim.

Frederick van Pelt, MD, MBA, completed his anesthesia training at the Brigham and Women's Hospital, Harvard Medical School. He was the founding Chairman of the Board for Medically Induced Trauma Support Services (MITSS) and is a faculty member at the Institute for Healthcare Improvement (IHI).

Maria van Pelt, CRNA, PhD (c), has conducted research in the aftermath of perioperative catastrophes and the impact on patient safety and provider wellness. She is on the Anesthesia Patient Safety Foundation Executive Committee and the Committee for Education and Training. She is the current Chair of the Massachusetts Association of Nurse Anesthetists Wellness Committee and the AANA Massachusetts State Peer Advisor.

Albert Wu is a practicing internist and Professor of Health Policy and Management in the Johns Hopkins Bloomberg School of Public Health. He has studied the handling of adverse events and patient safety since 1988 and published over 370 papers on safety, quality of care and patient outcomes. He coined the term "Second Victim" in his BMJ

paper published in 2000.

**Table 2. Domains and Sub-domains for a Second Victim Education Curriculum.**

Domains & Sub-domains*	Is the category relevant?	Is the category important?
	% agree	% agree
<b>I. Define and describe second victim</b>	100	100
a. Definitions	100	100
b. History of second victim	100	60
c. Examples of second victim	100	80
d. Incidence	100	100
1. Healthcare	100	100
2. Anesthesia	100	100
<b>II. Second Victim Risks for Nurse Anesthetists</b>	100	100
a. Stressful profession	100	80
1. Everyday risks/adverse events in a routine case	100	80
2. Expected death vs. unexpected death	100	100
3. Complex cases, high-risk cases, emergencies, pediatrics, obstetrics	100	80
4. Predicted vs. unpredicted difficult airway	100	80
b. Factors surrounding case, patient, history, expectations (just culture)	80	80
<b>III. Barriers for Second Victims</b>	100	100
a. Lack of recognition/respect for the issue	100	100
b. Peers, department, institutional barriers	100	100
c. Lack of support systems	100	100
d. Lack of knowledge about existing support systems	100	100
<b>IV. Consequences of Second Victim</b>	100	100
a. Personal	100	100
b. Professional	100	100
c. Environmental	80	80
<b>V. Evidence-Based Understanding and Interventions Frameworks</b>	100	100
a. Denham's Five Rights	80	40
b. Critical Incident Stress Management/Critical Incident Stress Debriefing	100	80
c. Scott's Recovery Stages	100	40
1. Survive, Thrive, Dropout	100	60
<b>VI. Support Systems</b>	100	100
a. Scott's Three-Tiered Model of Support	100	100
b. Peer	100	100
c. Departmental & institutional	100	100
d. National	80	80

<b>Domains &amp; Sub-domains*</b>	<b>Is the category relevant?</b>	<b>Is the category important?</b>
	<b>% agree</b>	<b>% agree</b>
1. Medically Induced Trauma Support Services (MITSS)	100	100
2. American Association of Nurse Anesthetists Health & Wellness and Peer Assistance	100	100

\*Percent agreement is calculated as number responding “yes”, divided by number of experts responding

(n=5). This is equivalent to Item Content Validity Index (I-CVI), for which the proposed standard is

.78.<sup>38</sup>

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