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Emergency Airway Preparedness At Ambulatory Surgery Centers With Solo Anesthesia Providers: An Educational Intervention

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Abstract

Objectives: The unanticipated difficult airway is a life-threatening circumstance that requires skilled and immediate intervention by trained staff in order to avoid the complications of cardiac arrest, anoxic brain injury, and death. Ambulatory surgery centers with solo anesthesia providers are unique environments where interdisciplinary team members may be relied upon to support emergency airway management, thereby reducing the gap created by absent expert backup anesthesia personnel. An educational intervention was developed to increase emergency airway preparedness, as indicated by change in knowledge and self-efficacy.

Methods: A 75-minute pretest/posttest educational intervention focused on emergency airway preparedness at ambulatory surgery centers with solo anesthesia providers was developed and presented at two sites. An expert panel evaluated elements of the intervention, as well as the assessment measures. Responses were collected related to clinical knowledge, self-efficacy, and demographics. Qualitative feedback was also solicited.

Results: Data demonstrated that educational intervention could increase clinical knowledge and self-efficacy related to the emergency airway preparedness of an interdisciplinary team. Confidence ratings that participants could identify the appropriate time for a surgical airway/cricothyroidotomy showed the largest increase in average self-efficacy. Most team members were unaware of the presence and location of emergency surgical airway equipment and most had never attended an in-service on difficult airway management.

Conclusions: Education regarding emergency airway preparedness can increase knowledge and self-efficacy among interdisciplinary team members at ambulatory surgery centers with solo anesthesia providers, which may increase patient safety and improve quality of care.

Key Words: patient safety, unanticipated difficult airway, ambulatory surgery center, cricothyroidotomy, interdisciplinary team, cannot intubate-cannot ventilate

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"By failing to prepare, you are preparing to fail."
Benjamin Franklin

The difficult airway is defined as "the clinical situation in which a conventionally trained anesthesiologist experiences difficulty with facemask ventilation of the upper airway, difficulty with tracheal intubation, or both." [1(p251)] Encountering a difficult airway after induction of anesthesia is a life-threatening circumstance that requires skilled and immediate intervention by trained clinicians. Therefore, effective management of the difficult airway is critical to the survival of these patients. [2] In fact, expertise in airway management has been described as a prime clinical skill that defines anesthesia providers. [3] Although airway management complications are rare, when they do occur, they are amongst the most life-threatening in all of medicine. [3,4] For these reasons, emergency airway preparedness should be actively pursued in all anesthetizing locations.

Deficiencies in airway management may be catastrophic for patients. [5] Hypoxia, for example, can cause irreversible brain damage in less than five minutes. [5] Indeed, complications of airway management have been identified as a major factor in anesthesia-related outcomes such as anoxic brain injury and death. [6] To this end, the 2013 Practice Guidelines for Management of the Difficult Airway published by the American Society of Anesthesiologists provide clinical pathways up to the endpoint of emergency surgical airway intervention or cricothyroidotomy. [1] Guidelines, importantly, are only as valuable as a team's ability to carry them out. These abilities should, therefore, be assessed with context-specific vigilance to ensure that environmental challenges are identified and overcome.

A recent multicenter analysis reported the overall incidence of difficult laryngoscopy to be 4.4%, the overall incidence of difficult mask ventilation to be 2.5%, and the overall incidence of difficult mask ventilation combined with difficult laryngoscopy to be 0.4% (or 4 of every 1,000 patients).[7] This is an important finding since research regarding the combination of these two techniques, each of which serves as a rescue for the other, is extremely limited.[7] The combination of the two can rapidly escalate into a *cannot intubate-cannot ventilate (CICV)* crisis, during which it may not be possible to achieve ventilation without emergency surgical airway intervention. An analysis of closed malpractice claims arising from management of the difficult airway demonstrated an increase in the odds of death and brain damage related to the development of an airway emergency.[6] It follows then, that meticulous attention to emergency airway preparedness is a more than worthwhile quest.

CICV emergencies are recognized as the most feared in anesthesia practice.[8] The tragic potential consequences of a CICV emergency underscore the importance of a preoperative airway evaluation to identify patients with difficult airways, the importance of which cannot be overemphasized.[9] Multiple assessment tools are helpful in predicting the difficult airway, but prediction of the difficult airway is far from perfect.[10,11] Ideally, guidelines and recommendations would exclude patients with difficult airways from freestanding ambulatory surgery settings.[12] Yet although patients with predicted difficult airways are not considered viable candidates for surgery at freestanding ambulatory surgery centers (ASCs), providers at such facilities may still encounter a patient with an *unanticipated* difficult airway. Thus, the difficult airway has been recognized as an inevitable circumstance wherever airway management occurs.[13]

The mechanisms for patient safety inherent in one environment, however, may not be the same in another. [14-16] All anesthetizing environments should, therefore, be carefully evaluated for site-specific vulnerabilities and ASCs are no exception.

Of the estimated 34.7 million ambulatory surgery visits in the United States in 2006, 14.9 million (42.8%) occurred in freestanding centers, rather than hospitals, and the rate of visits to these freestanding centers increased approximately 300% during the preceding decade. [17] In addition, many smaller freestanding ASCs adopt a model of utilizing only one anesthesia provider on site at any given time.

Inherent to the ASC environment and the solo anesthesia provider model are several patient safety vulnerabilities that may align to create a perfect storm when clinicians are faced with an unanticipated difficult airway emergency since

- solo providers at these facilities deliver care without expert backup anesthesia personnel available to aid in an airway emergency
- providers at these facilities may experience deskilling related to providing care for a population of less acuity [18]
- these facilities may lack expert anesthesia departmental oversight leading to inadequate policies and procedures in regard to emergency airway preparedness
- smaller organizations may have fewer resources than larger facilities with which to acquire expensive adjunct airway equipment

Given these challenges, solo anesthesia providers at ASCs lacking expert backup anesthesia personnel must rely on interdisciplinary team members to support emergency airway management within the respective non-anesthesia clinical staff member's scope of practice.

Hence, an educational intervention was developed to increase emergency airway preparedness, as indicated by change in knowledge and self-efficacy.

Methods

The Institute of Medicine has recommended the establishment of interdisciplinary team training programs to improve patient safety. [19] With this in mind, an opportunity to educate interdisciplinary team members at ASCs with solo anesthesia providers was recognized. A project management plan to address this opportunity was commenced and a 75-minute in-service was developed. An institutional review board (IRB) was queried and a determination was made that no IRB approval was required for the project. Permission was obtained for the use of the videos included in the in-service.

Instrument and Curriculum Development

A five-member expert panel was convened to share their respective expertise regarding the curriculum content, to assist in developing the pretest and posttest instruments related to clinical knowledge and self-efficacy, and to determine the appropriate demographic and qualitative items to include. Bandura's "Guide for Constructing Self-Efficacy Scales" [20(p307)] was used to facilitate development of the emergency airway preparedness self-efficacy instrument. Discussion among panel members identified the emergency airway management content essential for members of the interdisciplinary team. The expert panel prioritized the following categories of content: clinical knowledge, human factors, and crisis resource management (CRM). The panel also was queried regarding potential content omissions. Grant and Davis suggest that a content review questionnaire be used as a standardizing method for soliciting information on the content validity of the items and the total instrument. [21] Subsequently, after comprehensive content was refined and items were developed through several rounds of

discussion, a rating form was electronically delivered to each expert panel member. All items were evaluated for relevance (1 = not relevant at all, 2 = somewhat relevant, 3 = moderately relevant, and 4 = very relevant) as well as for clarity (1 = not clear at all, 2 = somewhat clear, 3 = moderately clear, and 4 = very clear). At final evaluation, all items developed for this project, including lecture content (headings and subheadings), were unanimously rated as 4 for both relevance and clarity. The inter-rater agreement was calculated to be 1.00, scale content validity index average was calculated to be 1.00, and all items were calculated to have an item content validity index of 1.00.

Setting

Organizations with one operating room utilizing solo anesthesia providers without additional expert backup anesthesia personnel were identified and offered the opportunity to participate. Two unrelated freestanding ASCs were recruited. The individuals responsible for organizing and scheduling the in-service at each of these facilities were asked to invite all clinical interdisciplinary team members to attend.

Educational Intervention

Participants were first instructed to complete the 10-question true/false pretest (see Appendix 1). After completing the true/false section of the pretest, participants were further instructed to rank 17 emergency airway preparedness-related task items assigning a self-efficacy score (corresponding to the participant's degree of confidence that he/she would be able to perform the described task) ranging from 0-100 in 10-point intervals (see Appendix 2). Self-efficacy items included tasks that could be carried out within the scope of practice of all members of the interdisciplinary team. Upon completion of the self-efficacy section, participants

answered several survey items related to the individual's clinical role, experience, and environment.

The pretest was followed by the video *Just A Routine Operation*[22] (available online at *chfg.org*), which tells the story of the preventable death of Elaine Bromily due to human factors. The primary author then delivered a lecture focused on management of the unanticipated difficult airway, which included the following major headings: (1.) the difficult airway; (2.) difficult airway emergency management; (3.) CRM; (4.) human factors impacting clinical performance; (5.) environment of ASCs with solo anesthesia providers; (6.) emergency airway preparedness; and (7.) site-specific supplies and equipment. Following the lecture, participants viewed an instructional video on cricothyroidotomy entitled *Videos in Clinical Medicine: Cricothyroidotomy,*[23] during which they received information regarding this emergency procedure and observed an actual cricothyroidotomy performed on a cadaver.

At the conclusion of the in-service, participants were asked to complete the posttests (identical to the pretests). Finally, a short qualitative feedback form asked participants to provide information regarding the value of the presentation in regard to each individual's practice, patient safety, and quality improvement. The form also solicited feedback regarding the participant's opinion of the general need for non-anesthesia clinical staff member education regarding emergency airway preparedness at like facilities. Confidentiality was ensured as names of participants were not collected and in-service site identifiers were not attached to any of the data.

Results

A total of 9 interdisciplinary team members attended the in-service from start to finish. Incomplete data collected from others who did not attend the entire presentation were excluded.

Demographic Questionnaire Results

Interdisciplinary team members who attended the in-service represented the following professional roles: 3 registered nurses (2 with over 15 years of experience, the other with 1-3 years of experience), 1 licensed practical nurse (with over 15 years of experience), 2 surgical technologists (1 with over 15 years of experience who also functioned as a materials manager, the other with 6-10 year of experience), 1 medical assistant (with less than 1 year of experience), 1 specified as "other" without description (with 6-10 years of experience), and 1 physician (with over 15 years of experience). The majority of participants (5 of 9) reported that the majority of their experience was acquired while working in the ASC setting, but only 3 had never worked in a hospital setting. The majority of participants (7 of 9) reported that they never attended an in-service regarding emergency airway preparedness prior to the presentation. Only 3 of 9 participants reported having participated in the care of a patient during a difficult airway emergency. When asked whether or not their organization maintained a tracheostomy tray and/or cricothyroidotomy kit ready and available in the operative area for emergency airway management, 4 participants reported *Yes*, 4 participants reported *No*, and 1 reported *Unsure*. Individuals in leadership roles at both sites verbally reported that their organization did, indeed, maintain such equipment.

True/False Pretest and Posttest Results

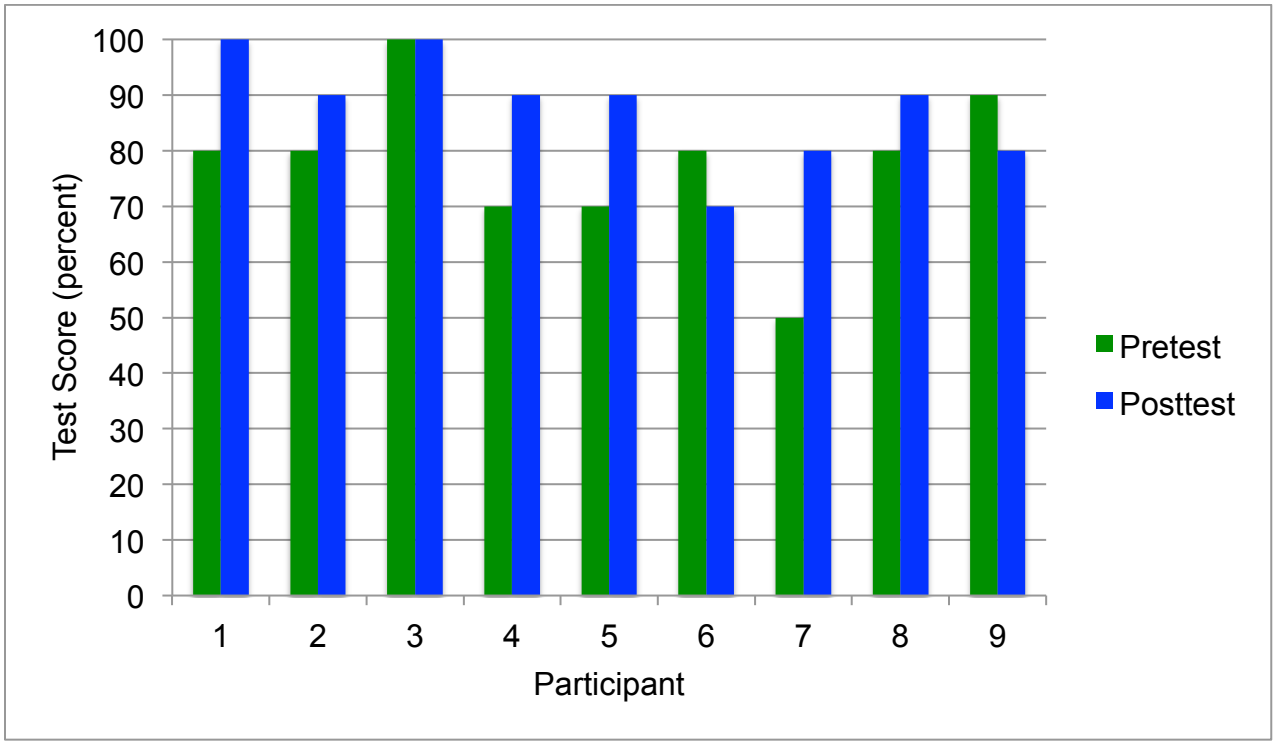
All participants correctly responded to several items on both the pretest and the posttest including content related to the importance of CRM during emergency situations (item 4), the value of keen situational awareness and assertiveness among team members (item 7), the necessity for having emergency surgical airway equipment accessible in the operative area (item 8), and the impact of human factors as contributors to adverse patient outcomes (item 10). Of note, the question testing knowledge related to whether or not a thorough pre-anesthetic

evaluation will allow an anesthesia provider to accurately predict a difficult airway (item 1) was answered incorrectly by all participants on the pretest except for the one registered nurse with over 15 years of experience who achieved a perfect score on both the pretest and the posttest. After the intervention, 4 of 9 participants answered this same question correctly, while 5 again answered it incorrectly.

Item 3 tested knowledge regarding whether or not the number one priority during a CICV situation is to secure the patient's airway through continued attempts to place an endotracheal tube until adequate ventilation is achieved. Item 3 was answered incorrectly by 4 of 9 participants on the pretest and by 2 of 9 participants on the posttest.

Figure 1 depicts the scores of each participant for the 10-item true/false pretest and posttest depicted in Appendix 1. Average test scores increased from 78% (pretest) to 88% (posttest), reflecting an average score improvement of 10 points.

Figure 1. Percent Correct on Pretest and Posttest Knowledge Test by Participant

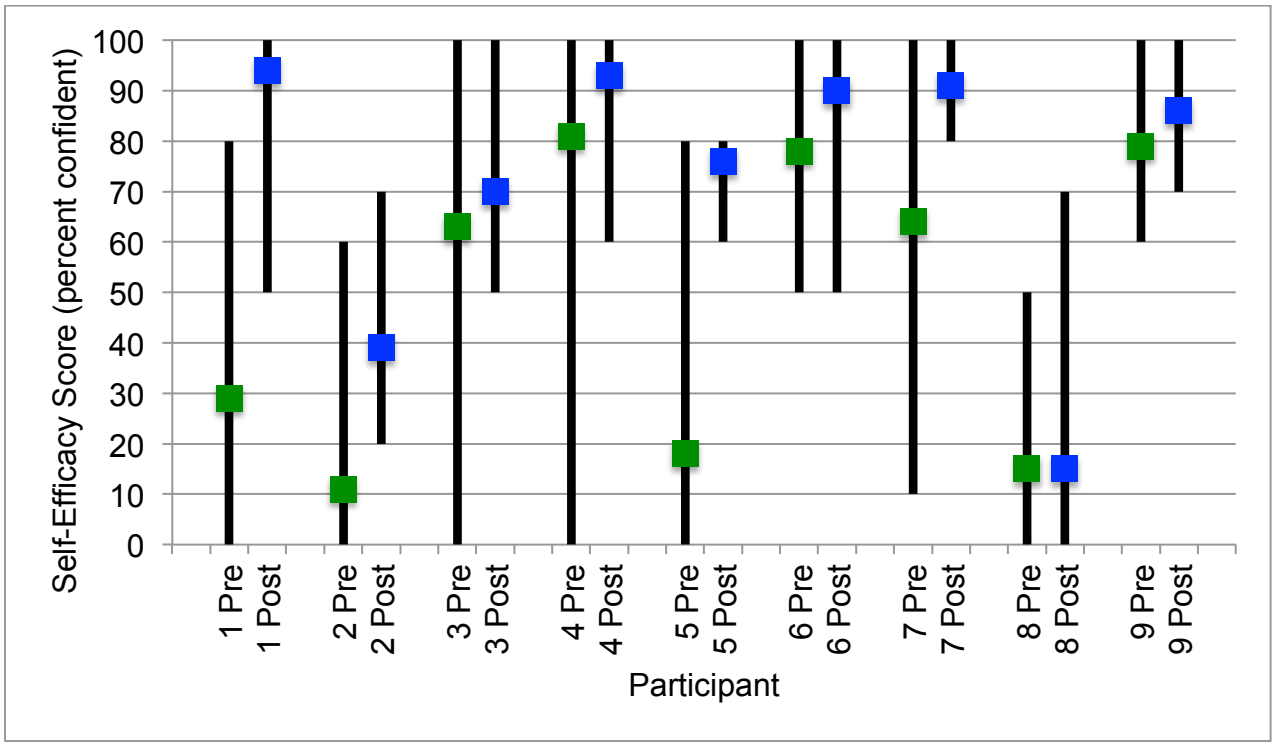


Individual participant scores on a 10-item true/false pretest and posttest regarding management of the unanticipated difficult airway.

Self-Efficacy Pretest and Posttest Results

Figure 2 depicts each participant's mean score and score range from lowest degree of confidence to highest degree of confidence (0-100, with 0 representing *cannot do at all* and 100 representing *highly certain can do*) in the full series of the 17 emergency airway preparedness-related pretest and posttest task items depicted in Appendix 2. The average mean score rose from 49% (pretest) to 73% (posttest), an improvement in average self-efficacy of 24 points.

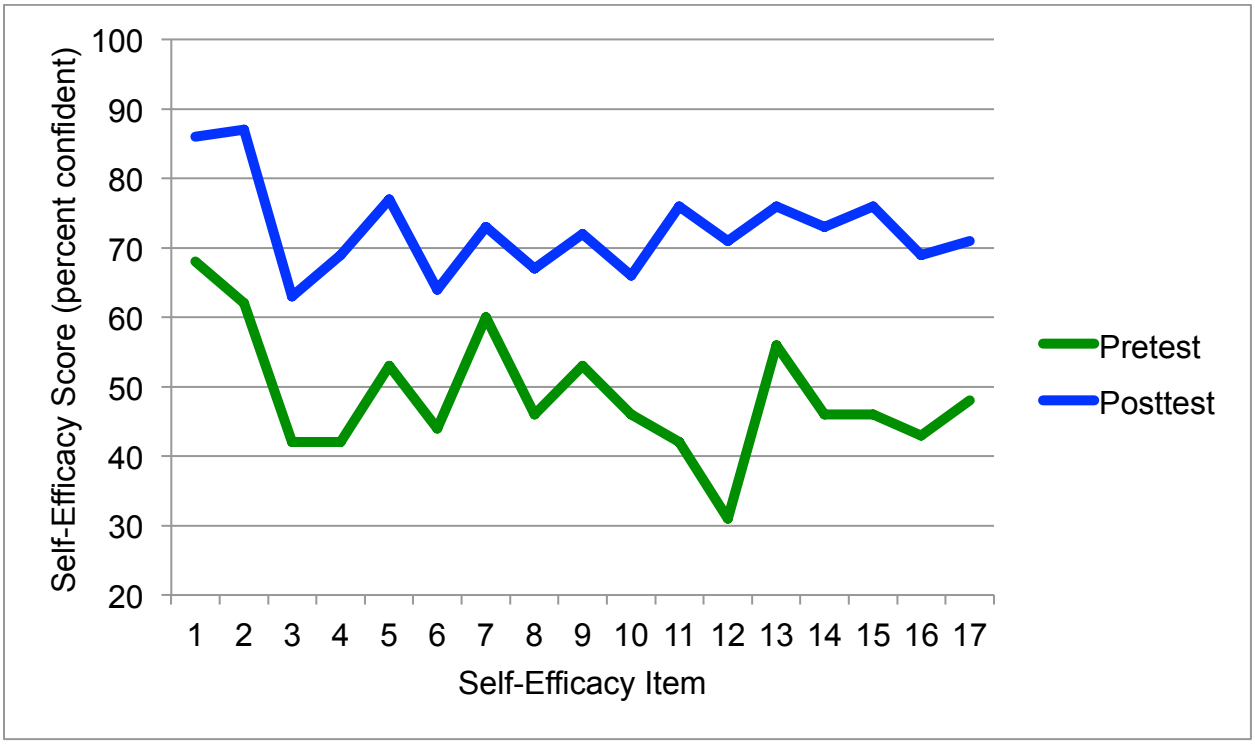
Figure 2. Mean and Range of Pretest and Posttest Self-Efficacy Scores by Participant



Self-efficacy score range by participant is depicted by the vertical black lines representing lowest degree of confidence to highest degree of confidence (0-100) in the full series of 17 emergency airway preparedness-related task items. Green boxes represent pretest participant mean of all items and blue boxes represent posttest participant mean of all items.

Figure 3 illustrates the average scores pertaining to the self-efficacy series by item. The degree of confidence rating that a participant could identify the appropriate time for a surgical airway/cricothyroidotomy (item 12) demonstrated the largest increase in average self-efficacy, reflecting an increase of 40 points on posttest (from 31% to 71%). The second largest increase in average self-efficacy relates to the degree of reported confidence in regard to properly preparing a laryngeal mask airway (LMA) during a cannot ventilate situation (item 11). This item showed an average increase of 34 points on posttest (from 42% to 76%).

Figure 3. Average Self-Efficacy Pretest and Posttest Scores by Item



Average (N=9) self-efficacy scores (0-100) pertaining to 17 emergency airway preparedness-related pretest and posttest task items.

Qualitative Feedback Results

Qualitative narrative feedback included the following: "Very valuable and very informative," "I think it is very important to provide as many centers as possible with this knowledge," "This is extremely relevant to our center's practice," "I definitely agree that all non-anesthesia staff members should be educated on emergency airway preparedness. Makes for a safer environment," "This was a very informative presentation. As an LPN, I do tend to rely on anesthesia to do everything, not realizing they do need every professional's help or hand," "Feel every ASC should have this presentation," "I now am certain I could be of great use in the case of an airway emergency," and "Much need for this."

Discussion

Although every organization has a variety of opportunities for improvement, gaps in care posing a direct risk to patient safety should be given top priority. [24] In order to both recognize and address gaps in emergency airway preparedness at ASCs with solo anesthesia providers, an understanding of the elements that impact emergency airway management is requisite. This understanding includes a healthy respect for human factors, the importance of support for both technical and non-technical skills, and the necessity of effective CRM, all of which, if not a present part of an organization's culture, should take precedence for staff education.

Non-technical skills include situational awareness, decision-making, and teamwork, which, when deficient, can increase chances of adverse events. [25] This information is important to understand since it has been demonstrated that despite the knowledge of skilled clinicians, errors in patient management still occur due to human factor issues. [26] Fixation errors demonstrating a loss of situational awareness, for example, have been shown to be salient amongst threats to patient safety. [27] In addition, human error accounts for up to 83% of anesthesia related incidents [28] and in complex systems, such as the surgical environment, 85% of problems originate from systems deficiencies. [29] Since human factors have such an impact on patient safety, Baker et al [30] recommend that training in human factors be part of an airway curriculum.

True/False Pretest and Posttest

Notably, item 1, asking whether or not a thorough pre-anesthetic evaluation will allow an anesthesia provider to accurately predict a difficult airway was answered incorrectly by 9 of 10 participants prior to the intervention. Although the professional roles of non-anesthesia clinical team members do not require competency in airway assessment, this knowledge deficit may be of significance. The false notion that difficult airways can be accurately predicted when

combined with the knowledge that patients with predicted difficult airways are largely excluded from the ASC surgical roster may lead interdisciplinary team members to erroneously assume that if an anesthesia provider is thorough and vigilant, then the likelihood of encountering an unanticipated difficult airway approaches zero. The risk of this potential assumption may be further increased when team members hold the organization's anesthesia provider in high regard. An understanding that an unanticipated difficult airway is one that remains undetected until after induction of anesthesia, despite a thorough preoperative evaluation, may prompt heightened awareness among interdisciplinary team members. Such heightened awareness may help to improve interdisciplinary emergency airway preparedness.

Knowledge regarding whether or not the number one priority during a CICV situation is to secure the patient's airway through continued attempts to place an endotracheal tube until adequate ventilation is achieved was tested by item 3. This question pertains to task fixation and the reluctance to try something different in the face of continued failure and was answered incorrectly by 4 of 9 on pretest and 2 of 9 on posttest. Persistent attempts at intubation are linked to worse outcomes.[6] An appropriate action to take after repeated unsuccessful attempts to place an endotracheal tube may include attempting ventilation with an LMA, or when appropriate, providing timely surgical emergency airway intervention such as performing a cricothyroidotomy. This is critical knowledge for team members to have if all non-anesthesia clinical staff members are relied upon to maintain situational awareness, to minimize provider task fixation through assertiveness, and to anticipate the next intervention in an airway emergency. Importantly, and to this point, teamwork skills also include speaking up when patient safety is at risk.[31]

A rise in average test scores from 78% (pretest) to 88% (posttest) reflected a 10-point improvement on posttest. This modest improvement speaks to the quality of learning during the intervention. Questions still answered incorrectly on the posttest may be the result of distractions inherent to the learning environment or suggest the need for further reinforcement of the content.

Self-Efficacy Pretest and Posttest

Bandura states, "The strength of people's convictions in their own effectiveness is likely to affect whether they will even try to cope with given situations." [32(p193)] Bandura further explains, "People fear and tend to avoid threatening situations they believe exceed their coping skills, whereas they get involved in activities and behave assuredly when they judge themselves capable of handling situations that would otherwise be intimidating." [32(p194)] Hence, the curriculum content was deliberately linked to self-efficacy measures with the aim of increasing participant confidence.

The average mean score rose from 49% (pretest) to 73% (posttest), an improvement in average self-efficacy of 24 points. Increase in average self-efficacy demonstrates the impact of the educational intervention in regard to the overall confidence of the participants. Improvement in confidence, particularly related to critical task items, may increase the likelihood that interdisciplinary team members will actually initiate expected behaviors when necessary.

The self-efficacy item showing the greatest average increase (40 points) pertains to the degree of confidence rating that a participant could identify the appropriate time for a surgical airway/cricothyroidotomy (item 12). This ability is of paramount importance for all team members if interdisciplinary team members are to maintain situational awareness and to facilitate progression to the endpoint of a difficult airway algorithm in a timely fashion when indicated. Wong et al recommend that providers of airway management be trained until the time it takes for

each to successfully execute a cricothyroidotomy on a mannequin is 40 seconds or less.[33] When seconds literally count, speed in execution of a potentially life-saving procedure is critical, but so is timely identification of the need to perform the procedure. Team commitment to preempt a post-mortem cricothyroidotomy (waiting too long) is imperative. In such an instance, knowing when a cricothyroidotomy is indicated is essential knowledge that must be shared by the entire team.

The self-efficacy item showing the smallest average increase from pretest to posttest pertains to the degree of certainty that a participant could maintain situational awareness during an emergency (item 7). Situational awareness is defined as "the perception of the elements in the environment within a volume of time and space, the comprehension of their meaning and the projection of their status in the near future."[34(p36)] Put quite simply, this means "knowing what is going on around you."[35(p17)] Studies of near misses in the aviation sector strongly suggest that the building of situational awareness and the subsequent decision-making process require the support of the entire team.[31] The results regarding this test item are not surprising since this nontechnical skill is less tangible than other self-efficacy items in the series as compared to more concrete tasks. Therefore, this skill will require more than one in-service to improve.

Divergence Between Knowledge and Practice

The juxtaposition of data regarding clinical knowledge and practice is remarkable in regard to the potential need for surgical airway intervention and may be the most significant finding of this project. All interdisciplinary clinicians participating in this project demonstrated recognition of the importance of effective CRM during emergency situations (item 4), the value of keen situational awareness and assertiveness among team members (item 7), the necessity for immediate access to emergency surgical airway equipment in the perioperative area (item 8), and

the impact of human factors as contributors to adverse patient outcomes (item 10) by unanimously identifying these items correctly on pretests as well as posttests. Yet when asked if their organization maintains a tracheostomy tray and/or cricothyroidotomy kit ready and available in the operative area for emergency airway management, 4 of 9 participants selected *No* and 1 selected *Unsure*. This echoes findings by Green, who reported similar knowledge deficits among nearly 2/3 of anesthesia providers regarding where to locate any emergency airway equipment and among assistants who could not be relied upon to find the closest emergency equipment. [36]

This important finding reveals that the majority of interdisciplinary team members at these in-service sites exhibit enough confidence to carry out day-to-day patient care (despite recognition of the necessity for emergency airway equipment availability) without any personal knowledge of the presence of this life-saving equipment, no less the ability to retrieve the necessary equipment should the need arise. The concept that professionals who share this common clinical knowledge and who recognize correct information among various domains of patient safety have neither taken the initiative to seek out such equipment nor have spoken up regarding the belief that this equipment is not available begs for further exploration and remedy.

Strengths and Limitations

This project serves as an "eye-opener" in regard to emergency airway preparedness at ASCs with solo anesthesia providers as well as a springboard for further exploration regarding this issue. It also highlights several areas of consideration for further examination.

Although a small sample size is a notable limitation of this project, it would be imprudent to presume other like facilities do not share the same vulnerabilities and risks, thereby excluding them from evaluation that may reveal similar opportunities for growth in regard to patient safety.

Recommendations for Further Study

These preliminary results reveal that it may prove beneficial to replicate this project at additional facilities. Other measures may also have utility such as a 6-month follow up evaluation, assessment of changes to policies and procedures, adoption of the curriculum as an annual in-service, and acquisition of equipment. Development of a tool or resource for facility self-assessment may also be of use.

Conclusions

Emergency airway preparedness is of grave importance and should be pursued and augmented to whatever degree possible in order to prepare for such an eventuality. Solo anesthesia providers at ASCs lacking expert backup anesthesia personnel must rely on interdisciplinary team members to support emergency airway management. To this end, clinical knowledge and self-efficacy must be shared among all clinicians who provide care for patients during emergency situations in order to optimally manage an unanticipated difficult airway crisis in this setting.

Education regarding emergency airway preparedness can increase knowledge and self-efficacy among interdisciplinary team members at ASCs with solo anesthesia providers, which may increase patient safety and improve quality of care.

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Appendix 1: True/False Instrument with Answers

Check the boxes that reflect whether the statements below are true or false. Answer the questions in the order they are presented without returning to a previous question.

Question	Answer	
1. A thorough pre-anesthetic evaluation will allow an anesthesia provider to accurately predict if a patient has a difficult airway.	True ☐	False ☐
2. A difficult airway emergency is a life-threatening situation that is best managed by a skilled anesthesia provider who is better able to perform without the distraction of non-anesthesia clinical staff member involvement.	True ☐	False ☐
3. The #1 priority during a cannot intubate-cannot ventilate airway emergency is to secure the patient's airway through continued attempts to place an endotracheal tube until adequate ventilation is achieved.	True ☐	False ☐
4. Effective Crisis Resource Management in an airway emergency requires team member collaboration with each participant providing critical support within his/her scope of practice.	True ☐	False ☐
5. Task fixation on any particular intervention with reluctance to proceed to the next step of emergency airway management may constitute what is known as failure to rescue.	True ☐	False ☐
6. Care team willingness to provide timely surgical airway intervention neither increases successful difficult airway management nor decreases the risk of fatal patient outcomes.	True ☐	False ☐
7. Keen situational awareness and assertiveness are required of all team members in order to facilitate adherence to a difficult airway algorithm in an emergency airway crisis.	True ☐	False ☐
8. It is critical that the equipment required to perform an emergency surgical airway is readily accessible in the operative area.	True ☐	False ☐
9. The quickest and most effective method of establishing an emergency airway is to insert a #14 gauge IV catheter through the cricothyroid membrane and to connect the catheter to an anesthesia circuit to provide emergency ventilation.	True ☐	False ☐
10. Human factors including ineffective leadership, loss of situational awareness, failure to prioritize, and lack of assertiveness are significant contributors to adverse patient outcomes in the operative setting.	True ☐	False ☐

Answers Key: 1. False, 2. False, 3. False, 4. True, 5. True, 6. False, 7. True, 8. True, 9. False, 10. True

Appendix 2. Self-Efficacy Instrument

A number of tasks are described below. How certain are you that you would be able to perform each of these tasks?

Rate your degree of confidence by recording a number from 0 to 100 using the scale given below:

0 10 20 30 40 50 60 70 80 90 100

Cannot do at all — Moderately can do — Highly certain can do

Task	**Confidence (0-100)**
1. Identify an airway emergency	
2. Accurately define the term "difficult airway"	
3. Describe a difficult airway algorithm	
4. Prioritize interventions regarding emergency airway management	
5. Support a sole anesthesia provider during an airway emergency	
6. Anticipate the next intervention during an airway emergency	
7. Maintain situational awareness during an airway emergency	
8. Provide clinical feedback during an airway emergency	
9. Properly prepare an endotracheal tube for emergency intubation	
10. Properly prepare a video laryngoscope (e.g. Glidescope) for use	
11. Properly prepare an LMA during a cannot ventilate situation	
12. Identify the appropriate time for a surgical airway/cricothyroidotomy	
13. Locate equipment for a surgical airway/cricothyroidotomy	
14. Prepare equipment for a surgical airway/cricothyroidotomy	
15. Prepare a patient for a surgical airway/cricothyroidotomy	
16. Be assertive when a surgical airway/cricothyroidotomy is indicated	
17. Participate in the execution of a surgical airway/cricothyroidotomy	