Preceptorship is an effective teaching and learning model that is the mainstay of undergraduate and graduate clinical education. It has a well-documented history in healthcare literature dating back to 1946. Certified Registered Nurse Anesthetists (CRNAs) who serve as clinical preceptors have the critical job of transferring high-quality patient care and patient safety skills to the student registered nurse anesthetists (SRNAs) they precept. The education of CRNAs in best precepting practices has the potential to enhance this transfer. However, most CRNAs do not receive formal instruction in how to precept SRNAs, which has the potential to limit the CRNA preceptors’ effectiveness in this critical educational role.

This article describes the iterative development and evaluation of an online, evidence-based CRNA Preceptor Training Tutorial (CPiTT). Four evidence-based precepting modules were developed through expert educators’ input and literature review. Feedback from CRNAs (n = 24) and SRNAs (n = 20) in a facilitated evaluation session refined the content. Additional surveys of both CRNAs (n = 97) and SRNAs (n = 36) established current local precepting practices, with gap analysis identifying areas of deficiency, which were incorporated into the learning modules. The final educational program was launched via an online learning management system.

Keywords: Clinical education, debriefing, nurse anesthesia preceptorship, online learning.
torship educational program. In 2008, Elisha developed and implemented an 8-hour, face-to-face CRNA preceptorship educational program. The author studied the impact of the program on the knowledge and behavioral perceptions of CRNA preceptors. Elisha reported that the preceptorship educational program had a positive and lasting effect on knowledge gain and positive behavior changes when comparing the precourse questionnaire responses to the postcourse questionnaire responses and the 2-month follow-up questionnaire responses among preceptors who participated.

Historically, an average of 40 to 45 students graduate from the University of Pittsburgh BSN to MSN Nurse Anesthesia Program (NAP) annually, from a total student body of 110 individuals interacting with preceptors in the clinical setting at any given time. As in all NAPs, these students primarily develop their clinical practice from being precepted by CRNAs. The University of Pittsburgh Medical Center (UPMC) Health System employs 400 CRNAs. Each SRNA administers more than 800 anesthetics, providing more than 40,000 opportunities annually where patient care and patient safety skills can be transferred. There is currently no formal nurse anesthesia preceptorship training program in place, although there are biannual CRNA to SRNA mentoring meetings with a focus on development of preceptor knowledge in the areas of student mentoring, education, and evaluation. It was clear that a substantial opportunity existed for development of an evidence-based CRNA preceptor online training tutorial. It was determined that the program should emphasize best practices in precepting and methods supporting the transfer of high-quality patient care and patient safety skills to SRNAs. The specific aims of this project were as follows: (1) develop and refine an online, evidence-based precepting training tutorial for CRNAs; (2) evaluate the training tutorial content by CRNA preceptors and SRNAs; (3) establish a baseline of precepting behaviors, as reported by CRNAs and SRNAs; and (4) use gap analysis methods to identify areas for improvement in the precepting process, to refine the online training tutorial.

Methods
This quality improvement project was granted exempt approval by the University of Pittsburgh institutional review board. Convenience samples of SRNAs from the University of Pittsburgh NAP and CRNA preceptors employed by the UPMC were surveyed to establish baseline precepting practices. Participation in the project was voluntary, with all participants informed they could refrain or withdraw from the project at any time.

This project consisted of 4 phases (Figure): (1) development of the evidence-based CRNA Preceptor Training Tutorial (CPiTT), (2) presentation of CPiTT content at the NAP mentoring event to gain CRNA and SRNA attendee evaluation of the program, (3) baseline survey of current preceptorship practices of CRNA preceptors and SRNAs, and (4) iterative modification of CPiTT based on evaluation and survey content. The desired outcomes of this project were to identify gaps between best practice in clinical precepting and what actually occurs in the clinical setting. Through identification of deficiencies in best practice, iterative modification of the CPiTT tutorial will reinforce effective teaching methods and an appropriate teaching-learning environment. The development of these modules was the terminal outcome of this project. We will discuss each phase in detail.

• Phase 1. Initially, CPiTT was developed through input from 5 experienced University of Pittsburgh nurse anesthesia faculty and the School of Nursing continuing education director. An extensive, key term literature search/review on preceptorship was also performed by using the University of Pittsburgh Health Sciences Library System to search the following databases: Ovid, MEDLINE and PubMed, AGRICOLA (US Department of Agriculture’s National Agricultural Library), Global Health, Health and Psychosocial Instruments, PsycINFO, and Cumulative Index to Nursing & Allied Health Literature (CINAHL). The results of those searches were carefully analyzed, and the content that was most applicable to nurse anesthesia preceptorship was included in 4 online CPiTT modules. The modules include analysis of the preceptor role; description of theory informing precepting and clinical teaching; practical approaches toward promoting student success; review of coaching, cueing, and prompting strategies; use of an “educational time-out (ETO)”; daily goal setting; providing feedback and debriefing; effective evaluation; enhancing transfer of clinical and safety skills; and addressing challenging precepting situations.
Both groups were allotted 2 weeks to complete the survey. Ability or validity testing was performed on either survey. Survey but with 2 nonapplicable items removed. No reliability or validity testing was performed on either survey. Survey but with 2 nonapplicable items removed. No reliability or validity testing was performed on either survey.

Preceptorship Survey mirrored the CRNA Preceptorship Survey, and to identify elements important to document current precepting behaviors reported by preceptor and student. The 15-item CRNA Preceptorship Survey collected demographic data and data regarding preceptor behaviors and attitudes, and allowed open-ended responses from preceptors. All survey items were provided on-site evaluation of the CPiTT presentation using a 6-item questionnaire (CPiTT Presentation Evaluation). The CPiTT Presentation Evaluation tool consisted of 3 Likert scale questions and 3 open-ended questions.

Phase 2. The University of Pittsburgh NAP conducted a CRNA preceptor to SRNA mentoring event, where volunteer CRNA mentors were paired with newly enrolled SRNAs who had not yet been in the clinical setting. The CPiTT modules were presented at this event with each module described in detail. A structured, facilitated discussion session was conducted to develop deeper understanding of the strengths and weaknesses of each module and the overall program. These responses were recorded for later analysis and module integration. A convenience sample of 24 CRNA attendees and 20 SRNA attendees provided on-site evaluation of the CPiTT presentation using a 6-item questionnaire (CPiTT Presentation Evaluation). The CPiTT Presentation Evaluation tool consisted of 3 Likert scale questions and 3 open-ended questions.

Phase 3. Following the mentoring event, an email with a recruiting script and a link to an online survey (Qualtrics, Qualtrics) was sent to all UPMC CRNA employees (CRNA Preceptorship Survey) and to all SRNAs in the NAP (SRNA Preceptorship Survey) who had been in the clinical setting for more than 3 months, excluding the SRNAs who participated in the mentoring program. Participation was entirely voluntary, and all responses were de-identified to maintain confidentiality. The surveys were designed to identify baseline precepting practices and experiences from the perspective of both preceptor and student. The 15-item CRNA Preceptorship Survey collected demographic data and data regarding preceptor behaviors and attitudes, and allowed open-ended responses from preceptors. All survey items were developed through review of published literature as well as interviews with educational experts. The tool sought to document current precepting behaviors reported by CRNA preceptors and to identify elements important to refinement of the CPiTT program. The 13-item SRNA Preceptorship Survey mirrored the CRNA Preceptorship Survey but with 2 nonapplicable items removed. No reliability or validity testing was performed on either survey. Both groups were allotted 2 weeks to complete the survey.

Phase 4. Face-to-face evaluation data (phase 2) and survey data (phase 3) were used to make iterative revisions to CPiTT based on analysis of the CRNA and SRNA feedback. The final versions of the modules were created in a digital slide project (PowerPoint) with professional narration in a recording studio. They were then processed as Windows.mov files for posting. The videos ranged in length from 8 to 18 minutes and were uploaded in the University of Pittsburgh online learning management platform (Blackboard, Blackboard Inc) via a video platform (Panopto, Panopto) that allowed video linkages. The video links were embedded in a folder structure, which included introductions, supporting references, suggested practice activities, and relevant NAP or School of Nursing policies. Each module incorporates a 10-item knowledge quiz with a threshold of 80% set for passing. A final 26-item comprehensive course evaluation referenced to all CPiTT objectives was developed and will be used for postintervention assessment and iterative development and quality improvement.

The modules were submitted and approved by the American Association of Nurse Anesthetists (AANA) for 4 Class A Continuing Education Credits. These credits will only be awarded for completion of all 4 modules. This design was chosen to serve as a motivator for CRNA completion of the modules.

Results

Twenty-four CRNAs and 20 SRNAs attended the face-to-face mentoring event and completed the CPiTT Presentation Evaluation. Likert scale responses indicated that all attendees agreed or strongly agreed that the content was presented in a clear manner, the slides were easy to read and enhanced the presentation, and the presentation increased their understanding of CPiTT. Open-ended comments were thematically analyzed and compared between CRNAs and SRNAs to identify areas of agreement relative to their importance in the teaching-learning relationship. Five themes emerged as highly valued by both groups: debriefing, CRNA/SRNA communication, introductory discussion at the beginning of each clinical day, sensitivity to student thoughts/needs, and providing structure to preceptorship (Table 1).

A preceptorship survey (Qualtrics) was then distributed to 400 UPMC CRNAs and all University of Pittsburgh SRNAs (excluding those without clinical experience). A total of 97 CRNAs (23.7%) completed the CRNA Preceptorship Survey, and 36 SRNAs of 87 (41.3%) completed the SRNA Preceptorship Survey. The demographic data for the CRNA and SRNA respondents are listed in Table 2. A difference in proportions test showed a statistically significant difference in gender between the 2 groups with a higher percentage of women among CRNA respondents. Of the CRNA respondents, 89 (94%) reported actively precepting SRNAs, with average experience in precepting being 11.8 years (range, 0.42-38

<table>
<thead>
<tr>
<th>Rank</th>
<th>Thematic area</th>
<th>agreement of importance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Debriefing</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>CRNA/SRNA communication</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Introductory discussion at the start of the clinical day between the CRNA preceptor and the SRNA</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Sensitivity to student thoughts/needs</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Providing structure to preceptorship</td>
<td></td>
</tr>
</tbody>
</table>

Table 1. Summary of Comments From the CRNA Preceptor Training Tutorial (CPiTT) Presentation Evaluation

Abbreviations: CRNA, Certified Registered Nurse Anesthetist; SRNA, student registered nurse anesthetist.
The average frequency of precepting was 6 times per month (range, 1-12 times per month).

The CRNA and SRNA responses to the preceptorship experience questions of the survey were compared using a 2-sample proportions test. Tables 3 and 4 compare CRNA vs SRNA perceptions of the frequency of use of 7 specific teaching methods in the clinical setting. These 7 teaching methods were operationally defined (based on the literature) in the surveys as follows:

- **Modeling**: The preceptor demonstrates his or her clinical expertise as the SRNA observes.7
- **Case presentation**: The preceptor and the student discuss specific elements of cases to allow the SRNA to demonstrate knowledge and critical thinking ability.8
- **Coaching**: The preceptor gives specific direction to the SRNA through the steps of a technique.7,8
- **Prompting/cueing**: The preceptor provides indirect clues or suggestions that move an SRNA to take a particular course of action or initiate an intervention.9
- **Open-ended (direct) questioning**: The preceptor asks open-ended questions to stimulate longer and more thoughtful responses from the SRNA.8
- **Sequential questioning**: The preceptor asks a series of questions to probe understanding, encourage problem solving, and provide an opportunity to share observations and interpretations of data.10
- **Pimping**: The preceptor asks a series of difficult questions with the purpose of identifying knowledge deficiencies or gaps.10

### Table 2. Summary of Nurse Anesthetists’ and Students’ Preceptorship Survey Demographic Data

<table>
<thead>
<tr>
<th>Demographic data</th>
<th>CRNA respondents (n = 97)</th>
<th>SRNA respondents (n = 36)</th>
<th>Test statistic</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender, No. (%)</td>
<td></td>
<td></td>
<td>4.64 (z score)</td>
<td>&lt; .0001</td>
</tr>
<tr>
<td>Female</td>
<td>67 (69)</td>
<td>29 (81)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>30 (31)</td>
<td>7 (19)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age (y), mean ± SD (range)</td>
<td>45.2 ± 10.9 (28-65)</td>
<td>28.6 ± 3.0 (24-38)</td>
<td>13.67 (t score)</td>
<td>&lt; .0001</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Diploma</td>
<td>2</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bachelor’s</td>
<td>15</td>
<td>36</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Master’s</td>
<td>78</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Doctorate</td>
<td>2</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nursing experience (y), mean ± SD (range)</td>
<td>22.2 ± 11.4 (5-43)</td>
<td>5.3 ± 2.1 (2.5-10)</td>
<td>13.98 (t score)</td>
<td>&lt; .0001</td>
</tr>
<tr>
<td>CRNA experience (y), mean ± SD (range)</td>
<td>14.5 ± 11.0 (0-38)</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Precepting SRNA experience (y), mean ± SD (range)</td>
<td>11.8 ± 9 (0.42-38)</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Frequency of SRNA precepting (times per month), mean (range)</td>
<td>6 (1-12)</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

<sup>a</sup>Only 86 of the 97 CRNAs responded to this question.

### Table 3. Comparison of Nurse Anesthetists’ and Students’ Report of Currently Used Preceptor Teaching Methods<sup>b</sup>

<table>
<thead>
<tr>
<th>Teaching method reported as being used</th>
<th>CRNA % (n = 88)</th>
<th>SRNA % (n = 36)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modeling</td>
<td>67 (76)</td>
<td>33 (92)</td>
<td>.047&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Case presentation</td>
<td>41 (47)</td>
<td>26 (72)</td>
<td>.009&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Coaching</td>
<td>80 (91)</td>
<td>36 (100)</td>
<td>.061</td>
</tr>
<tr>
<td>Prompting/cueing</td>
<td>83 (94)</td>
<td>36 (100)</td>
<td>.144</td>
</tr>
<tr>
<td>Open-ended questioning</td>
<td>84 (95)</td>
<td>35 (97)</td>
<td>.65</td>
</tr>
<tr>
<td>Sequential questioning</td>
<td>68 (77)</td>
<td>36 (100)</td>
<td>.002&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Pumping</td>
<td>10 (11)</td>
<td>29 (81)</td>
<td>&lt; .0001&lt;sup&gt;8&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

<sup>a</sup>Signifies statistical significance.

<sup>b</sup>A series of difficult questions with the purpose of identifying knowledge deficiencies or gaps.
Statistically significant differences between the groups were noted in opinions on use of the other 4 teaching methods (modeling, case presentation, sequential questioning, and pimping). The largest disparity in opinion regarding whether a teaching method was used (or not) was seen related to the method termed “pimping.”

A total of 13 specific clinical preceptor actions were also surveyed. The CRNA and SRNA responses demonstrated agreement on the use of 5 actions: review attainment of specific goals related to the clinical day, provide a formal debriefing (structured review of performance) at the end of the clinical day, and provide an informal debriefing (unstructured review of performance) at the end of each clinical day. Disagreement was noted with respect to 2 actions: provide ongoing formative feedback (corrections along the way) and complete a written evaluation provided by the anesthesia program by “checking the boxes.” This is important because the current evaluation tool consists of clinical objectives with completion determined by checking a Likert scale box (satisfactory, unsatisfactory, needs more experience). Because there is also an area for narrative response, this item was intended to identify perceptions related to use of box checking vs providing written narrative. Disagreement was also noted in perception of verbal and written feedback. The CRNAs indicated that they provided verbal feedback at a higher rate than the SRNAs reported they did.

The survey also queried incorporation of the AANA’s 11 Standards of Nurse Anesthesia Practice during clinical precepting, with a focus on how these standards were transferred to students. Both SRNAs and CRNAs agreed that 9 of the 11 standards were routinely transferred during precepting. However, there was disagreement regarding the transfer of Standard I: Perform and document a thorough preanesthesia assessment and evaluation and Standard II: Obtain and document informed consent; the CRNA respondents indicated that the transfer occurred to a higher degree than did the SRNA respondents.

The final area surveyed was related to formal training in precepting. Both groups indicated that they had little training, with only 22% of CRNAs and 39% of SRNAs (in their roles as intensive care unit nurses) indicating prior training. Most members of both groups indicated that they believed formal training would be helpful, with a significantly higher percentage of SRNA respondents compared with CRNA respondents expressing this perspective (94% vs 62%, respectively).

### Discussion

Our first specific aim was to develop the online, evidence-based CRNA Preceptor Training Tutorial (CPiTT). The content of CPiTT was carefully selected. Each module has a specific evidence-based focus geared to enhance a CRNA preceptor’s ability to more effectively transfer his or her high-quality patient care and patient safety skills. The following is a detailed description of each module; the modules are also summarized in Table 5.
• Module 1: Understanding the Preceptor Role. This module defines precepting and highlights the benefits of effective CRNA-SRNA preceptorship such as the following: individualized educational experience for the SRNA; correlation of didactic knowledge to the real-life clinical management of patients; examples for SRNAs to emulate as they develop their practice; and effective transfer of high-quality patient care and patient safety skills. It also looks at how educational theory can be applied to CRNA-SRNA preceptorship to make it more effective. For example, the Bloom taxonomy has 3 domains: cognitive, psychomotor, and affective, and each domain has subcategories that go from basic to advanced. The CRNA preceptor can help the SRNA move from those basic subcategories to the advanced ones. For instance, the SRNA may know how to execute bag-mask ventilation, but the CRNA preceptor might challenge the SRNA to think through how he or she would recognize that the bag-mask ventilation was inadequate and the steps the SRNA would perform to increase adequacy.

• Module 2: Promoting Student Success. This module highlights the aspects of the clinical environment that the CRNA can control (eg, his or her own attitudes and actions) and cannot control (eg, the surgeon, the anesthesiologist, the OR temperature, or type of cases for the day); as well as explain the value (eustress) and harm (distress) of stress in the clinical environment. It also explains the 5 levels of nursing practice (novice, advanced beginner, competent, proficient, and expert) and how the CRNA can help the SRNA move along that continuum. For example, the SRNA may know how to execute bag-mask ventilation, but the CRNA preceptor might challenge the SRNA to think through how he or she would recognize that the bag-mask ventilation was inadequate and the steps the SRNA would perform to increase adequacy.

• Module 3: Ensuring Skill Transfer and Effective Evaluation. This module focuses on how the CRNA preceptor can more effectively transfer his or her high-quality patient care and patient safety skills. It introduces the concept of the educational time-out (ETO). It also introduces an innovative way for CRNAs to evaluate/debrief with SRNAs using the Gather, Analyze, and Summarize debriefing tool. The GAS debriefing tool13 is a structured and supported debriefing tool to be utilized by CRNA preceptors with SRNAs at the end of the clinical day. The G or gather phase focuses on listening to the SRNA about the clinical day. The A or analyze phase facilitates the SRNA reflection on and analysis of his or her actions as directed by the CRNA preceptor’s observations and questions. The S or summarize phase facilitates identification and review of lessons learned by both the CRNA preceptor and the SRNA, identifying what the SRNA did well and areas where the SRNA could improve. This crucial communication helps to ensure that both the CRNA preceptor and the SRNA are on the same page as far as the SRNA’s performance and allows them to create a plan for the SRNA’s continued clinical success.

• Module 4: Challenging Situations. This module looks at difficult clinical situations that could arise during the nurse anesthesia program (ie, SRNA injury, clinical events, academic warning/probation, unsatisfactory clinical performance, Family Educational Rights and Privacy Act [FERPA] and litigation, and the SRNA evaluation process). Our second specific aim was to present the CPiTT
content at the NAP mentoring event to gain CRNA and SRNA attendee evaluation and feedback. According to the CPiTT Presentation Evaluations from the NAP mentoring event, the most interest (12 comments) was expressed for developing debriefing skills in general and the GAS debriefing tool specifically. The GAS debriefing tool is part of the structured and supported debriefing model adopted by the American Heart Association for Advanced Cardiac Life Support (ACLS) and Pediatric Advanced Life Support (PALS). The GAS tool has been integrated into the University of Pittsburgh clinical debriefing tools for utilization by CRNA preceptors with SRNAs at the end of the clinical day. Several CRNAs reported that debriefing was lacking in their current preceptorship practice. This was further supported by the fact that only 15% (13 respondents) of the CRNAs who completed the CRNA preceptorship survey reported engaging in a formal debrief with SRNAs at the end of the clinical day. Introduction and discussion of the GAS debriefing tool was included in module 3 of CPiTT, with this feedback reinforcing the value and inclusion of this material.

The second area identified as important from the face-to-face mentoring event was the “importance of communication between the CRNA preceptor and the SRNA” (11 comments). The SRNAs’ communication with all members of the anesthesia and surgical teams is emphasized in CPiTT module 2. CPiTT further addresses this area of interest in module 3, which includes the GAS debriefing tool and recommends a structured and planned communication huddle before each clinical day or case. We termed this huddle an ETO, which is described earlier. Both CRNAs and SRNAs believed that this purposive inclusion of the student’s thoughts and needs were important for improving the teaching-learning interaction and thus the precepting process. CPiTT module 3 emphasizes the integral part of student input in both the GAS debriefing tool and the ETO. The CRNAs and SRNAs also appreciated that CPiTT, via techniques such as the ETO, would provide a more predictable structure to the student-preceptor interaction. The GAS debriefing tool and the ETO provide CRNA preceptors with a new and structured way to enhance their communication with the SRNAs they precept.

A few CRNA preceptors expressed how challenging it can be to deliver constructive criticism to SRNAs. We address this concern in module 4 by emphasizing the importance of discussing the issue/concern with the SRNA directly, respectfully, and confidentially. Keeping those 3 things in mind will hopefully help the conversation go more smoothly. Making the SRNA aware of the CRNA preceptors’ concerns will afford the SRNA the opportunity to make the necessary changes to his or her clinical practice to ensure future success.

We fulfilled our third specific aim of establishing a baseline of precepting behaviors as reported by CRNAs and SRNA via the data gathered from preceptorship surveys (CRNA Preceptorship Survey and SRNA Preceptorship Survey) administered to each group. We used a gap analysis (specific aim 4) to compare the survey data and make refinements to CPiTT. The gap analysis of the CRNA and SRNA Preceptorship Survey data showed significant differences related to teaching method use, clinical actions engaged in, and key care standards that are transferred. The following paragraphs describe this analysis in detail.

The SRNAs reported that the teaching methods of modeling, case presentation, pimping, and series questioning were used at a significantly higher rate than the CRNA preceptors reported. CRNA preceptors may not be explicitly aware that they incorporate these techniques, suggesting a need for follow-up education on learning method terms. This difference in perception could also be attributed to how closely SRNAs observe CRNA preceptor behaviors, which could result in a perception bias. CPiTT module 1 defines the preceptor role, with one of the focus points being the CRNA as the most influential role model for students.

The use of the technique termed pimping demonstrated the most significant divergence of opinion and use. The use of pimping can increase the stress for the SRNAs in the already stressful clinical environment because the technique involves a series of increasingly in-depth questions, which places the student in a defensive posture. Because pimping is not perceived as a student-friendly teaching method, CRNA preceptors may not be explicitly aware they are using it or may not wish to admit to using it. CPiTT modules 1 and 2 discuss the role that stress plays for better (eustress) or for worse (distress) in the clinical learning environment. These modules provide information and advice on how to detect and alleviate student stress. Equipping CRNA preceptors with practical techniques on how to help SRNAs be successful despite stress was a specific goal in the development of these first 2 modules.

The CRNA preceptors reported that they engaged in the following clinical precepting activities to a significantly higher degree than the SRNAs reported: identify the student’s specific level in the program, probe for student experience with the current case, establish specific goals at the beginning of each clinical day, provide ongoing formative feedback (corrections along the way), review student written management plan before the case, and provide an informal debriefing (unstructured review of performance) after each case (see Table 4). The clinical learning environment can be daunting, especially to SRNAs during initial portions of the clinical program. So much of the SRNAs’ cognitive ability is used on performing tasks and managing cases that it is possible that some clinical and teaching activities of CRNA preceptors can be missed by SRNAs. The clinical precepting activities just mentioned
closely correlate with the phases of the ETO that are discussed in module 3. The CRNA preceptors reported that they already frequently engage in these clinical teaching activities. It is our hope that the structure that the ETO provides will make these activities more consistent, streamlined, and more evident to the SRNAs.

As is true with many evaluation systems, the traditional University of Pittsburgh NAP daily SRNA evaluations have both checkbox and narrative response features. Preceptors can offer feedback by checking a box indicating how an objective or technique was met/performed (ie, satisfactorily, unsatisfactorily) or complete a corresponding section where they can provide written narrative. The SRNAs reported that the CRNA preceptors tend to only check the boxes when completing the written evaluation form vs providing narrative comments as well. The CRNA preceptors reported greater use of narrative comments. It is likely that production pressures during the clinical day limit the amount of written narrative that CRNA preceptors can provide. It is our hope that the structured interactions and feedback tools introduced in CPiTT module 3 will help to calibrate expectations and resolve this gap.

The SRNA respondents reported that the CRNA preceptors could more effectively provide ongoing verbal feedback during the case. Sometimes, if the case is intense or is not going well—either from a surgical standpoint or an anesthesia standpoint, dialogue between the CRNA preceptor and the SRNA may not be prudent. Knowing this, the CRNA preceptor may delay communication with the SRNA for a more appropriate time. Such delay may contribute to SRNAs’ belief that verbal feedback during the case has a lower rate of occurrence. We address the appropriate engagement of CRNA-SRNA communication during stressful clinical situations in module 2 of CPiTT.

Both CRNAs and SRNAs agreed that 9 of 11 Standards of Nurse Anesthesia Practice were routinely transferred during clinical precepting. However, CRNA preceptors reported a significantly higher transfer of Standard I: Perform and document a thorough preanesthesia assessment and evaluation and Standard II: Obtain and document informed consent, of the 11 Standards of Nurse Anesthesia Practice than the SRNAs did. This difference could be attributed to the fact that, in the local practice, the anesthesiologist typically performs the preoperative evaluation and obtains consent while the CRNA supplements this evaluation after meeting with the patient and confirms that the consent form is signed. The CRNA preceptors may perceive that this practice pattern fulfills transfer of Standards I and II information, whereas the SRNAs may perceive that they need to personally perform all elements.

Of note, only 62% of the CRNA preceptors reported that formal training in preceptorship would be beneficial to them. Perhaps, this is because many of them have been precepting SRNAs successfully thus far without such training. The goal of CPiTT is to enhance the existing precepting skills of experienced providers while providing practical advice on use of theory and evidence-based teaching principles. In this way, both new and experienced preceptors may benefit from the program. Furthermore, the standardization of such a program will help new and experienced preceptors alike to more effectively transfer high-quality patient care and patient safety skills to the SRNAs they precept.

There were several weaknesses identified in conducting this quality improvement project. First, the inclusion of students and clinical instructors from only one NAP and health system and the small sample size of the CRNAs and SRNAs are limitations. Since participation in this project was voluntary, self-selection bias by the CRNAs and SRNAs who participated is possible. Despite the addition of operational definitions to survey instruments, it is also possible that there was confusion on the terms (eg, pimping vs sequential questioning). Finally, the impact of the implementation of CPiTT as a tool toward improving the teaching-learning environment in our institution will require additional longitudinal study not possible within the scope of the current project.

Conclusion
In this quality improvement project, we used an iterative development process to create an online, evidence-based preceptor training tutorial for CRNAs. Literature review, face-to-face presentation, and survey methods were used to continuously improve the program. During this process, we discovered that debriefing and communication between CRNA preceptors and SRNAs is valued and important to both parties. Both groups also agreed that formal training would be beneficial. Areas of disagreement included the use of some teaching methods (eg, modeling and pimping), use of specific teaching actions, and the transfer of 2 of the 11 AANA Standards of Nurse Anesthesia Practice.

It is our hope that these differences can be bridged with the online, evidence-based training tutorial that has been developed. When it comes to the transfer of high-quality patient care and patient safety skills from CRNA preceptors to SRNAs, effective and clear communication is key. Equipping CRNA preceptors with the tools to improve their communication and effectiveness with SRNAs via CPiTT is of vital importance. Our plan is to make CPiTT available to current CRNA preceptors, to new CRNA preceptors, and to SRNAs about to graduate from the NAP. Further analysis of CPiTT will need to be completed once the program has been fully implemented across the UPMC system and our other clinical affiliates. It is our hope that CPiTT will improve the clinical educational experience for SRNAs and CRNAs alike and have a positive impact on the nurse anesthesia profession.
by showcasing a continued commitment to professional development and high-quality patient care. Once we can demonstrate a positive impact on the clinical education of SRNAs, it is our goal to offer this program to other NAPs through the AANALearn portal.

REFERENCES


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