There is a lack of standardization among evaluations completed by clinical educators of student registered nurse anesthetists (SRNAs) during their clinical education as reported by nurse anesthesia program administrators and students. To address this issue, the Council on Accreditation of Nurse Anesthesia Educational Programs (COA) Board created the Common Clinical Assessment Tool (CCAT) Special Interest Group to develop a standardized clinical evaluation instrument. The goal was to improve the consistency of clinical evaluation across nurse anesthesia programs while assisting program administrators to make programmatic changes to ensure compliance with COA standards. In May 2016, the CCAT Special Interest Group began to create an evaluation instrument that was competency based and reflective of the COA’s Practice Doctorate Standards. After a review of literature, input from the communities of interest, results from the American Association of Nurse Anesthetists professional practice survey, and analysis of the National Certification Examination for Nurse Anesthetists content outline and information from other sources, a draft CCAT was completed. A Delphi study was conducted, and expert opinions from program administrators, academic and clinical faculty, and students were collected to ascertain consensus on competencies, competency descriptors, and progression indicators. 

Keywords: Clinical assessment, clinical evaluation, evaluation instrument, evaluation tool.
accurately assess SRNAs’ clinical competencies. In 2016, the COA appointed a CCAT Special Interest Group (SIG) to develop a standardized assessment instrument that is competency-based and reflective of the COA Practice Doctorate Standards. A competency-based evaluation instrument was developed by the SIG, and a 3-round Delphi study was conducted to validate the instrument. For transparency and inclusivity, this study included participation from nurse anesthesia program administrators, clinical educators, and SRNAs. The final version of the CCAT was approved by the COA in January 2019. The tool will become available to nurse anesthesia programs after they attend the COA’s virtual CCAT orientation.

• Review of the Literature. The literature related to clinical evaluation in nurse anesthesia programs is limited. However, the scholarship on clinical evaluation of student performance in other health profession educational programs offers a context from which to better understand the need for a universal clinical assessment tool. Regardless of the specialty, students enrolled in health profession programs that involve direct patient care must be monitored and consistently evaluated based on their current performance to protect patients from harm.

Although most CRNA clinical educators are expert clinicians, few have received education on adult learning principles, how to be effective teachers, and how to evaluate student learning. According to Elisha and Rutledge, “if expectations for clinical performance were clearly stated, agreed on by all anesthesia faculty members, and explained to students, this uniformity could improve the quality of clinical educator constructive criticism and evaluation.” Providing clinical educators with an understanding of program policies and expectations for completing clinical evaluations, as well as informing them of how the evaluation is used by the nurse anesthesia program, may lead to more objective and timely evaluation submissions.

Due to an increased demand for accountability, healthcare professions are establishing methods to demonstrate competency of their graduates. Assessment of clinical performance and competence is an ongoing challenge for both academic faculty and clinical educators in health profession programs. Throughout the literature, it is evident that regardless of specialty, clinical educators are uncertain about assessing clinical performance and about their responsibility and accountability in assessing performance of SRNAs during clinical education.

There is a lack of standardization and consistency among clinical educators’ evaluation of SRNAs’ competencies during their clinical education in the United States, which decreases instrument validity. Concerns are warranted about this lack of established validity during clinical evaluation and the ability of the evaluation tool to detect a student who is not accomplishing the clinical objectives. This fact is a concern for program administrators because decisions related to a student’s progression in the program rely on clinical evaluations.

Materials and Methods
• Delphi Method. This exploratory study used a Delphi method to systematically solicit and collate the judgments of panel members to elicit experiential observations, opinions, and perceptions to inform the development of the CCAT. Delphi is a research method used when the goal is to achieve consensus on a select topic by a panel of experts. This method involves an anonymous, structured, and staged process of having the expert panel complete several rounds of surveys or questionnaires.

One of the advantages of the Delphi method is the ability to include a larger number of participants from diverse geographical locations without the need for face-to-face contact. A limitation of the Delphi study is the inability to have discussion or to resolve differences of opinion.

After approval from Louisiana State University Health Sciences Center’s institutional review board, the Delphi method was used to ascertain the judgment of experts and to assess priorities in nurse anesthesia clinical education. This information helped CCAT SIG members establish the validity of domains, domain descriptors, competencies, and progression indicators. The Delphi method employed panel members’ assessment of 3 versions of the CCAT. A complete data collection round consisted of survey completion by each type of panel member (described in the next paragraph); calculation of a content validity index (CVI); and revision of the domains, competencies, and progression indicators based on panel members’ data.

• Panel Composition. The panel members were volunteers enrolled during recruitment at the 2017 American Association of Nurse Anesthetists Assembly of School Directors and SIG members. This nationwide exploratory study was not limited to geographical or physical setting. The 4 types of panel members were stakeholders who met the inclusion criteria: (1) nurse anesthesia program administrators with a doctoral degree and a minimum of 3 years of experience as an administrator; (2) nurse anesthesia program faculty members with a doctoral degree and a minimum of 3 years’ experience as a faculty member; (3) clinical educators with a minimum of a master’s degree (doctoral degree preferred) and a minimum of 3 years of experience as a clinical educator; and (4) SRNAs with a minimum of 1 year of clinical experience, in good academic standing, and with a letter of recommendation from the nurse anesthesia program administrator or a program faculty member.

These types of panel members were selected to generate a diverse perspective of input and expertise from relevant stakeholders in nurse anesthesia education. Panel members indicating an interest were sent an invitation
flyer by email describing the study purpose, inclusion criteria, and participant requirements. Panel members who voluntarily consented to participate received email correspondence with an informed consent document, a secure universal resource locator link to a website, and specific instructions for completing each respective round of expert opinions regarding the CCAT.

- **Data Collection.** The study instrument consisted of a demographic data collection tool to establish panel members’ eligibility for participation and their relevant expertise. The second section of the study instrument consisted of evaluation of the domains, domain descriptors, competencies, and progression indicators. Domains and domain descriptors are included in Table 1. The instrument consisted of 4 domains, 25 competencies, and 5 progression indicators. The initial domains and competencies used to initiate the panel members’ feedback were patient safety and perianesthesia care (9 competencies), knowledge and critical thinking (6 competencies), professional communication and collaboration (4 competencies), and professional role (6 competencies). The progression indicators were narrative descriptions of behaviors expected for each competency leveled according to the following categories: not applicable, safety concern, novice, advanced beginner, and competent and proficient to enter practice. It is important to note that although the COA cannot guarantee other nursing accrediting agencies will determine that the CCAT meets their requirements, the CCAT SIG created a data crosswalk between the CCAT domains and competencies, the COA's Practice Doctoral Standards, and the American Association of Colleges of Nursing Common Advanced Practice Registered Nurse Doctoral-Level Competencies (Table 2).

Each panel member received an electronic copy of the instrument for each round of data collection. The panel members rated the relevance of each of the domains, competencies and indicators using a 5-point Likert scale (1 = not relevant, 2 = somewhat relevant, 3 = neutral, 4 = quite relevant, or 5 = highly relevant). This Likert relevance rating was used to generate a CVI for each domain, competency, and progression indicator. The expected CVI for each domain, competency, and progression indicator to be rated as quite or highly relevant was established at 90% to ensure the item was clear and valid.

In addition to providing a Likert rating for each domain, competency, and progression indicator that was used to generate a CVI, each panel member was given an opportunity to provide open-ended comments and suggestions regarding wording, meaning, and content clarity, or to pose questions for the researchers to consider for each domain, competency, and progression indicator.

- **Data Analysis.** Upon conclusion of each round of data collection, the statistician computed the CVI for each domain, competency, and progression indicator and provided the narrative comments. Each domain and the respective competencies and progression indicators for the domain was assigned 2 researchers (primary and secondary reviewer) to independently review and summarize the findings to recommend revisions for the subsequent round of data collection to the CCAT SIG. Revisions to the domains, domain descriptors, competencies and progression indicators were made by consensus agreement via virtual meetings. Once the team completed the data analysis, each team member reviewed and edited the document before a subsequent distribution of the CCAT for the next round of data collection. The Figure summarizes the methods used for data collection.

### Results

As a first step in the Delphi process, a demographic survey was sent to potential panel members to gather contact and credentialing information. A total of 133 individuals responded to the survey, with 47 identifying themselves as program administrators, 20 as program faculty, 39 as clinical educators, and 27 as SRNAs. Of this group, 54 program administrators and faculty, 20 clinical educators, and 19 students (70% response rate) completed the round 1 survey.

Panel members evaluated each of 149 items comprising 4 domains, 4 domain descriptors, 26 competencies, and 115 progression indicators using an ordinal scale from “not relevant (1)” to “highly relevant (5).” Responses were summarized as the percentage of panel members in each group and overall who responded

### Table 1. Domains and Domain Descriptors of Common Clinical Assessment Tool

<table>
<thead>
<tr>
<th>Domain</th>
<th>Domain Descriptor</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Patient safety and perianesthesia care</td>
<td>Administers and manages comprehensive, safe, and patient-centered anesthesia care across the lifespan for a variety of procedures and physical conditions</td>
</tr>
<tr>
<td>2. Knowledge and critical thinking</td>
<td>Comprehends, synthesizes, applies, and evaluates new and existing knowledge and experience that guides clinical anesthesia decision making</td>
</tr>
<tr>
<td>3. Professional communication and collaboration</td>
<td>Engages in effective communication with patients, their families/significant others, and other healthcare professionals to deliver safe, patient-centered anesthesia care</td>
</tr>
<tr>
<td>4. Professional role</td>
<td>Practices in a responsible and accountable manner that complies with professional, legal, ethical, and regulatory standards with an awareness and responsiveness to the larger healthcare system</td>
</tr>
</tbody>
</table>

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“highly relevant” on each item. Survey items not rated as highly relevant by at least 90% of panel members were included in subsequent rounds for further evaluation by the panel of experts.

In a Delphi study, attrition is a concern and may be attributed to survey fatigue. The numbers of panel members and survey items for review decreased in rounds 2 and 3 as indicated in Table 3. The attrition rate for panel members in round 2 was 23% and in round 3 was 17%, for a total attrition rate of 41% (see Table 3). To account for sampling variability, the percent of panel members responding highly relevant to each survey item
(P) was tested against the 1-sided alternative test, $P < 90\%$, and the resulting $P$ value was included in the table of results provided to panel members and the survey team. Table 4 provides an accounting of the numbers of survey items not rated “highly relevant” by at least 90% of panel members, across item categories, Delphi rounds, and panel member roles. The CVI was also computed for each item and summarized by category for rounds 1 to 3. The CVI for an item was computed as the percentage of panel members rating that item highly relevant. The CVI averaged 75% (range, 37%-94%) in round 1, with a mean CVI of 81 for domain items, 80 for domain descriptors, 78 for competencies, and 74 for progression indicators. For round 2, CVI averaged 83, with a mean of 82 for domain descriptors, 80 for competencies, and 83 for progression indicators. One domain descriptor was evaluated in round 3 achieving a CVI of 75%, while the CVI averaged 83% (range, 69%-95%) for progression indicators. After completion of the third survey in the Delphi study, 4 domains and domain descriptors were determined, and they are presented in Table 4.

Discussion
Before empaneling the members for the CCAT SIG, it was important to the COA directors that the opinions of all stakeholders—administrators, academic and clinical practitioners, SRNAs, and the public—were included in the discussion of the competencies, domains, domain descriptors, and progression indicators. During the Delphi study, multiple revisions of every component of the CCAT were completed. The final product is representative of diverse perspectives, and as a result, we believe that this tool will be effective and improve clinical evaluation of SRNAs.

Consistently accurate evaluation of a learner's clinical performance during anesthesia education is vital because it allows for the identification of strengths and areas for improvement, effective integration of academic knowledge into clinical practice, and improved competence upon graduation. The use of standardized rubrics during clinical evaluation improves the accuracy of assessment and can be correlated to the learner’s grade point average and professional objective scores. Additional advantages include serving as an early warning system if an SRNA is having difficulty with clinical performance, assessing whether semester and terminal clinical objectives are achieved, and acting as evidence through documentation for clinical remediation, probation, or dismissal. A lack of standardization related to clinical evaluation may increase the potential for unwarranted dismissal of a learner.

Use of a standardized rubric can help program administrators evaluate their policies, procedures, curriculum, and methods of instruction to determine whether objectives are met and make improvements as needed. The evaluative process consists of the evaluation instrument, the method (ie, computerized or paper/security) and the clinical educator. If one or more of these components is ineffective, the clinical evaluative process lacks reliability. Clinical educators must consistently recognize, analyze, and provide written and verbal feedback if evaluation is to be meaningful to SRNAs. Interactive faculty development education for the evaluation of medical learners has been perceived as useful and applicable to improving clinical assessment.

The CCAT SIG has created an educational interactive virtual orientation designed to help inform users on the intended use of the CCAT during clinical assessment. Attendance at the presentation is mandatory before its use is allowed. An evaluation plan will determine the reliability of the CCAT and guide future revisions. Additionally, program administrators, clinical and academic educators, and SRNAs will be queried on the ease of use, applicability to clinical practice, and adherence

![Figure. Methods Used for Evaluation and Revision of Common Clinical Assessment Tool](image)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Round 1</th>
<th>Round 2</th>
<th>Round 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Panel member role</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Program administrators</td>
<td>54</td>
<td>43</td>
<td>33</td>
</tr>
<tr>
<td>and faculty</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clinical educators</td>
<td>20</td>
<td>13</td>
<td>8</td>
</tr>
<tr>
<td>Students</td>
<td>19</td>
<td>15</td>
<td>14</td>
</tr>
<tr>
<td>Total</td>
<td>93</td>
<td>71</td>
<td>55</td>
</tr>
<tr>
<td>Survey item category</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Domain</td>
<td>4</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Domain descriptors</td>
<td>4</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Competencies</td>
<td>26</td>
<td>7</td>
<td>0</td>
</tr>
<tr>
<td>Progression indicators</td>
<td>115</td>
<td>106</td>
<td>91</td>
</tr>
<tr>
<td>Total</td>
<td>149</td>
<td>115</td>
<td>92</td>
</tr>
</tbody>
</table>

![Table 3. Numbers of Panel Members and Survey Items for Review During Each of Three Delphi Rounds](table)
to the COA doctoral standards for clinical education. Revisions will be made to the CCAT as the nurse anesthesia profession continues to evolve and as evaluation of clinical practice changes, requiring modifications.

**Conclusion**

With use of the Delphi method, the CCAT has been developed for nurse anesthesia programs to use on a voluntary basis for the clinical evaluation of SRNAs. Increased standardization of clinical evaluation of SRNAs using the CCAT will help improve the consistency of clinical assessment. Furthermore, SRNAs will have greater opportunities to understand the areas of their practice that clinical educators determine as proficient and those that need improvement. This information can result in greater preparedness of SRNAs to enter clinical practice. Once the CCAT is in use, analysis and evaluation of this tool will allow clinical educators to provide feedback on the CCAT and its accuracy and consistency in assessing the clinical performance of SRNAs. Although the use of the CCAT by program administrators is optional, it is anticipated that the benefits of the CCAT will encourage its use.

**REFERENCES**


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