Past Event: 2024 NCSBN APRN Roundtable - Transforming Assessments of Clinician Knowledge: A Randomized Controlled Trial Comparing Traditional Standardized and Longitudinal Assessment Modalities Video Transcript

Event
2024 NCSBN APRN Roundtable

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Presenter
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>> Christopher: It's a pleasure to be with you today for the APRN Roundtable, and I'm looking forward to having a discussion about transforming assessments of clinician knowledge and sharing with you the NBCRNA's take and perspective on comparing traditional standardized methodologies compared to longitudinal assessment modalities. So, with that, I will briefly introduce myself. My name is Christopher Gill. I have the privilege of being in the role of chief credentialing officer at the National Board of certification and recertification of nurse anesthetist's. I have been in my position for the past three plus years, and it has been an awesome, tremendous experience to delve into certification and regulatory affairs at a deeper level. Today I am going to focus on a couple of objectives to discuss with you. I want to really compare and contrast knowledge versus competence, with the differences are, similarities, historical methods that the NBCRNA has used to assess CRNA knowledge specifically. I want to talk to you and have a discussion around our randomized controlled trial assessing and evaluating two methods of knowledge assessment for CRNAs, and to share with you and hope you understand how the study findings link to the development of a new continued certification program. Just some baseline concepts to start with, knowledge versus competence. Clinical knowledge is largely theoretical information. We talk about diseases, treatments, procedures, and guidelines, to kind of draw a distinction. Competence is more broad but inclusive of practical skills, judgment, and behaviors of our profession, so much more related to the practical day-to-day. And this is not unfamiliar material for most of you, but really the knowledge is what we acquire in our initial training and then have to maintain as we practice. But it is this clinical competence that really helps guide us once we are out in the working world. I think the key takeaways here I want to drive home, both dimensions are crucial for knowledge, evaluation and come brands of measurement of knowledge assessed is what you know, competence assesses how you apply what you know. And it is really balancing measurement of these that enhances health care quality and patient care outcomes. When we talk about entry-to-practice, it is this knowledge mastery required to enter and begin and become, as I like to call it, baseline confident. We are lifelong learners by nature. For registered nurses, advanced practice registered nurses, physicians, PAs, all

individuals in the health care milieu, we are really responsible for understanding knowledge to begin practice, and this is measured by standardized examinations. These standardized examinations are what we call kind of the public litmus test, and it really tells us what an individual must have in order to begin safely practicing. I like to use the quote that my colleague and my superior at the NBCRNA says, John Preston. "No one likes going to the DMV, but everybody appreciates the freedom and ability that driving provides." So it is really this entry-to-practice and regulatory place to function in. Where you want to center our discussion today, continued practice. Is there a best practice for continued practice? I don't know that we have it completely nailed down. Do the same mechanisms capture the initial mechanisms, capture what continued practice requires? Some do, some don't. And what happens when current programs fall short of stated goals? How do we reevaluate and come in many ways, reimagine a program when we have fallen short of stated goals? More questions than answers here, but I'm going to give you some answers very shortly. There is a range of current mechanisms that are used today to understand continued practice. We have continuing education units, CEUs we are asked to do. Semisynchronous and some are a synchronous in nature. We have standardized exams we can apply to individuals, both in the initial certification and continued certification. The health care simulation has shown promise for certain avenues but might not be broadly applicable for a number of reasons. Cost to travel there, cost to run with the personnel, as well as the time away from clinical practice that an individual must submit to you. In the last thing I just threw in there is a portfolio submission. Some regulatory and licensing boards have chosen to go the realm of looking at a portfolio of what our current practitioner is doing, measuring that in terms of the benchmark. So there's a lot of tools out there, but is there a best one? I don't know. Ideal characteristics are certainly helpful to guide us to get into a best one, so I think when we are talking about clinical professionals and individuals that are out in practice, we have to have things that are practical for practicing clinicians. We have to look at what strengths they have and what liabilities they have. The other thing that I think is highly advantageous for practicing professionals is suggesting personalized educational opportunities. When we have identified liabilities, we generally want to fill them as clinicians and we want to know what we should do and what will get us to a place that we need to be and we should be. So I want to talk to you briefly before I go into our randomized controlled trial about our certification journey. No certification journey is complete without talking about the past, and I won't spend too much time on this, but we had a legacy recertification program that function for over 40 years. It was a good program by a lot of measures, but times have changed, the public and the patients we serve have really asked us for more than verifying contact information, verifying practice hours or certain practice arrangements, and just saying "is your licensure good and unencumbered?" they expect more of us than doing passive CEUs. So our Legacy program focused on making sure we had the adequate contact information to reach out to people, that they were practicing, and they had licensure requirements that were met. We moved from that to present day and a lot of times we had questions from our certificate body in terms of why we would move from a legacy program to a contemporary continued professional certification program. This was largely predicated on changing accreditation requirements. The NBCRNA, like many of you in the certification space, has two accreditors. accreditors are asking more of certifiers in terms of what they are doing to measure knowledge after that initial training point in time. Changing needs, certainly we know that knowledge and skills are developed over a time and based on practice arrangements. They may vary based on individuals. We also wanted to make sure we recognize the activities that CRNAs were doing, so these were really strong reasons to change our program. The last is technology. Technology has changed. I talked about simulation. Virtual reality, skills check-offs now exist. I'm going to talk to you in large part about longitudinal assessment and answering questions over a time period. But there's a lot of promising opportunities on the horizon, so he felt those were compelling enough to change our program. What we

did is we split off our class of CEUs to two different versions. Class a was kind of our similar to the previous 40 CEUs, but we upped it from 40 to 60 in a 4-year cycle. For CRNAs this has to be prior approved by the educational accreditation, and it had to have an assessment, much like previous CEUs. Individuals can always have more, but they can't have less than 60. Class B was a category we added. This was looking at professional development activities, leadership, scholarly work, exercising new techniques in a clinical realm. So we don't have an assessment for this. It is not prior approved. And they can have up to 40 CEUs in this category. But we broadly said it had to support patient safety, enhance the knowledge of nurse anesthesia practitioners, and relate to a broader health care environment. Probably the most contentious part of our current program is that we added an assessment. So CRNAs that have been in the certificate pool prior to 2016 really did not have to take a formalized assessment outside the initial entry into practice. So we introduced what is called the continued professional certification assessment, CPCA, kind of a mouthful. It's not like our National certified exam, or entry practice gatekeeping assessment. The CPCA focus on clinical knowledge required of experienced CRNAs, knowledge that was common for all CRNAs regardless of practice focus. I used to say, CRNAs don't necessarily always provide cardiovascular anesthesia for open-heart cases or valve replacements, but every patient has a heart, so an interest in cardiac physiology was essential. This outline is available on our website and is developed using professional practice analysis methodology. The CPCA was not a mechanism whereby individuals would lose their certification. If they fell below and establish performance benchmarking, we requested them to take additional focused CE, one for each category. If they didn't need to, they were good to go through the next certification cycle. So a majority of our certificate pool will complete this and is completing this now, and will have it done by 7/31/24 or 7/31/25. This leads us to the question, where are we making a critical error from the start? Could it be that we had the assumption that we launched CRNAs into practice of capabilities that they would remain at or above performance levels until they retire? This is really a strong question. We know from other realms, just personal, we certainly can have mastery at one point in time, but without active work, may not maintain mastery in certain topical areas if we are not going to them over and over. As a certifier who led both staff and Board of Directors, we have taken the view of competency for lifelong learning. So there's multiple tools and methodologies whereby you can assess this and measure this and evaluate it, but it really centers on knowing one's practice, being able to scan the environment for changes occurring or that have occurred, managing learning in practice, so this is kind of self-directed activities. You have to be able to raise and answer questions, and you have to assess and enhance your practice over time after you graduated. So we weren't led by problems in the space, we really want to lead into the future with a positive perspective and methodology. If you look on the left, you can see certification, acceptable performance. We have met the benchmark, past our initial certifying exam. But is really once and then good for life? Many people will stay, many will go above, but there are some individuals who will fall below and we want to identify them and gently bring them up. So if you move to the right hand graph, we can see the competence that we enter with or maybe even more specifically novice. You pass, you have set baseline knowledge, you enter as a novice, you move to advanced, you achieve competency hopefully in all categories but in core areas for sure, and what we really want to do is move them from competent to proficient and expert and maintain them at that high level. What that requires outside of the initial training is deliberate professional practice and evaluation. Setting the stage for the future, we wanted to make some assumptions. CRNA education has not specifically focused on skills required to be a lifelong learner but has focused on expert clinicians. People buy in large gravitate toward learning they don't need. Why? When we are interested in a topic we tend to choose consuming more of that information, and we tend to shy away from the things that don't necessarily excite us. CRNAs must enter practice with a set of learning competencies like all APRNs that will enable them to

critically assess and revise their practice to make sense of complex situations and learn from experience. So it is really this interconnected web of knowledge, complex situations, and clinical judgment, and growing over time, that we want to build our programs around. With that in mind, we set out for the future, so one of the things we think is highly promising and that I'm going to present to you in brief, kind of our study findings on a randomized controlled trial looking at longitudinal assessment, if you have to define it and think about it in your mind, it is simply a cross-sectional methodology that seeks to apply principles of adult learning in measurement of knowledge. So I'm very distinct in saying, not competence, but knowledge. Because we believe we can measure knowledge. We cannot necessarily 100% measure competence. But having the requisite knowledge will certainly set individuals up for competent practice, and there's other stakeholders in this process that are on this call, probably, that have a role in assessing competence. Even more basically it can be thought of as a tool that evaluates individual knowledge dynamically. We often see longitudinal assessment applied to practicing clinicians as a set number of questions per quarter that they are introduced, and it's these shorter periodic assessments with immediate feedback that shows significant promise in helping practicing professionals increase their knowledge and understanding on topics and also reinforce what they have today. So when I say adult principles of learning and longitudinal assessment, these are the ones I'm kind of driving home or want to give you a sense of. Learning linked to testing, the more frequently we see repetitive assessments, the more likely that information is to become durable in our mind, and the connections will become stronger. That way, when we are asked to recall in the clinical realm or professional realm, we are more likely to do it expeditiously then we were before. Space learning, exposure to materials interspersed with other activities. Again, strengthening neural connections. When you take a deck of cards, you are in grade school and trying to learn different subjects, if you space to learning and move between math and science and English, then you are going to have a better exposure and a stronger connection to all of those topics and if you just studied them separately. Subject matter, simultaneous presentation of different topics, if you took those cards and you'd took some and mix them all up, that would even further enhance your ability to recall information. Providing instant and immediate feedback is highly advantageous, learning through repetition, which I've talked about, offering convenience and learning platforms is really key with adults, and there has to be some self-direction and determinism to a point. We set out to do a research study. We had some study aims. He wanted to compare pass rates and mean scaled scores on the assessment among CRNAs in a traditional assessment, CPCA group, as a parent, compared to a longitudinal assessment group. We saw differences in the perceptions and attitudes between the two methodologies using scales, and we wanted to understand satisfaction and whether the tools promoted lifelong learning. The third and kind of final studying was that we wanted to be able to describe the longitudinal assessment participant's experience in engagement using data triangulation focus groups, which we did. So requirements between the two groups, the traditional assessment group versus the longitudinal assessment group. The traditional assessment group, we really just ask them to do what individuals are already doing today. We had to solicit a group that hadn't completed the activity to date, but it was a single 3-hour, 150-question assessment that was either in-person through our Pearson Vue Center, our contracted vendor, or online, again through Pearson Vue, and that had to be completed before the study ended. The longitudinal assessment cohort really had to answer when hundred 35 questions, a total of 135 questions come over four quarters. He could see them listed there. Some similarities between the groups, all questions were developed using the same item bank. The question distribution was similar and used the same content outline, and even though we use different sets of questions with the two groups, we did pulled them from one item bank, and it was a created using a common scale. Outcome measures, in brief, we sought to understand what the performance differences were between two groups. The perceptions and attitudes dig into the

satisfaction and promotion of lifelong learning through longitudinal assessment focus groups, and then we wanted to understand what engage participants the most and what they felt was most usable as a practicing clinician. When we talk about participant recruitment, we were fortunate enough that he will see the diagram on the screen in front of you -- we put out a call for volunteers in 2022, we conducted the survey in a large part of 2023. We sought to elicit a thousand volunteers, and during the call for volunteers we had over 10,000 interested individuals. So that was highly advantageous for us and we were very proud of that accomplishment. We randomized the individuals between two groups, matched them one to one look at gender, age, and years of practice as representative of the practicing continuing certification cohorts we had. So we randomized 500 CRNAs into the CPCLA cohort and the traditional assessment, the CPCA group, where they took the assessment. Our power analysis said that we needed at least 320 per group, and we exceeded that and we are very fortunate. These demographics are highly representative of practicing CRNAs, but we see in large part that we had similar distributions between CPCLA and CPCA in terms of gender distribution. Again, this is consistent with what we know about the CRNA population. The age range was similar between the groups, a slight difference, but largely similar in terms of average age and years of practice. And then, in terms of geographic distribution, these are known in states where we have the highest kind of CRNA population. But the CPCLA group had Pennsylvania, Texas, Florida, Ohio, and Tennessee. And within the traditional assessment, Pennsylvania, to Texas, Ohio, Florida, and Illinois, all states with the highest populations. The longitudinal assessment specifications where that individuals in that cohort had a duration of 12 months. You can see the start and end dates they are. They had to answer a set number of questions, the content was balanced according to our professional practice analysis, the blueprint was the same with the traditional assessment. They had to answer between 30-35 items per quarter. They were given immediate feedback as well as rationale for why the answer was correct or incorrect, a reference, and then confidence ratings were solicited from the individuals. They had one minute per item, they were not allowed to skip any questions, but they could see -- that is where the 35 questions comes in -- in quarters 2-4, five repeat questions. They could also look at the question history as well as some scoring and normative data. So what were our results of the study? While getting into the first research question is the performance, whether it's comparable, the answer is yes. Between the groups we saw that, within the two groups come in the L.A. group we had 85%, almost 86% of individuals meeting the performance standard, and in the CPCA, 94% of individuals. Interestingly enough, when we added in if questions were readministered if they got the question correct on the readministration, we counted it correct as if it was correct from the start. We moved up from a very similar percentage of performance meeting the standard, so 91 compared to 94%. So that was really reassuring in terms of what our research question was. When you look at the initial response scored versus most recent, when scoring incorrectly on the initial attempt, the mean scaled score for the L.A. group, the mean score was 649, and that was significant a higher than the mean score of those that we classified based on first response, 562. When we talk about perception results, the question is if there is a difference in perceptions and attitudes and methodology, we had some data collection time points. For the CPCLA we had the fortune of feeding the individuals because you have them in a year time period, and four Strong touch points at the ending of the quarter. We delivered post quarterly assessment surveys in addition to a final usability survey, and offer the ability for focus groups which were optional. The CPCA was a post assessment exit survey only, and centered on that kind of one time point. But what we learned when comparing the two groups is that the satisfaction for both testing experiences was roughly the same. CRNAs were satisfied with their test taking experience regardless of the format they took it in. The CRNAs that took CPCA were slightly more satisfied with their testing experience than those in the L.A. format, however, what we notice is that the participants in the CPCLA group rated most other items higher than participants in the

CPCA group. Overall, participants were most satisfied with CPCLA in terms of the ability to help with knowledge gaps, and they felt it was an accurate reflection of core knowledge required of all parents and professionals. Interestingly, the lowest indoor statement by the L.A. group was that it provides better care to patients by helping maintain knowledge. We have seen that before. It is hard to extol the virtues and the benefits and the value of certification to participants. They know they needed for practice, but where does the rubber meets the road in terms of what they actually get out of it, outside of the fact that they have the ability to earn a livelihood and provide care to patients and practice in a certain realm? We looked at individuals in the number of hours they spent studying. On average, how many hours did you study per week? The L.A. group, we saw 64% of people were really not studying, versus the CPCA, the traditional assessment, 37% went into that without studying. So more people taking the traditional assessment. That stands to reason. When you take a traditional assessment, you want to go back through the books and study. When we are given this longitudinal assessment with interspersed repetitive questions, we tend to look at it as less stressful, perhaps, and more relatable, so we had -- we are less likely to study in that methodology. In terms of looking at what individuals preferred, we saw that, when we asked the L.A. group which methodology they would prefer in the future, they largely said longitudinal assessment, because they were experiencing it and seeing the benefits of that tool in action. The CPCA group was kind of split, probably because most of those individuals are not experiencing the benefits of the longitudinal assessment platform, and/or may not have been as familiar with the methodology. In the third research question, we sought to elicit, is use of the L.A. platform feasible, acceptable, and usable? What we saw was an average overall rating of 4.3 out of 5 stars, and we felt that was very strong and highly advantageous in terms of potential for adoption in the future. When we kind of sought to dig into topics at a deeper level, you will notice the average rating for all the questions was really 3.08, which we felt indicated that participants were generally satisfied with the platform. The highest rated question was completing 30-35 questions per quarter was feasible with my schedule, and that scored 3.62. I would take this format again, 3.5. Some of the ones that fell into the lower stratum, individual said participating in L.A. increase my knowledge base and anesthesia. And then, L.A. helped change how I practiced nurse anesthesia. So it does beg the question, although it is beyond parts of this particular randomized controlled trial, it does beg the question if over time we would see these items kind of move up in value as individuals saw some of those areas of liability or weakness become more obvious to them. As they started to fill those voids with personalized educational opportunities, would they then see the value. But as I stated before, I think extolling the value of certification is really a difficult charge. We try to establish value through a number of focal points, but sometimes it can be nebulous to get to the end user. When we look at the platform ratings, we saw that login process was easy, the platform was easy to navigate without too much effort, and they felt the knowledge dashboard was helpful in that it was easy to track performance. Those are all characteristics that we sought and had ideals for. Things that kind of showed up at the lower level was that information on the review page was helpful, or probably readily accessible to them, references with answers to questions were useful, and questions were clearly written at the appropriate ability level, a little bit lower. We see those all his opportunities for development in our platform over time, so it is highly useful to get that information. When we talk about the overall usability score, the usability scoring matrix allowed us a score between 0-100, and anything above 68 was considered above average. You will see the reference thereto the tool used. But the CPCA/LA longitudinal assessment platform elicited a usability percentage of 80%. So we were really happy with that outcome. When the asked individuals if they would recommend a longitudinal assessment to a CRNA collie, 95% of them said yes, so we were pleased with that finding. When we looked at the perceptions and attitudes, in summary, we found overall participants related to migrated usability of the platform highly, that's why talk about the 4.3 out of 5 stars. They also found

participants preferred a more continuous L.A. format in the future, according to the survey results. And although these findings were not statistically significant, there were some differences in perceptions and attitudes when we compared the ratings. The longitudinal assessment group ratings were higher than the CPCA traditional assessment, as rated in promoting lifelong learning. So that is highly advantageous. The L.A. platform showed above average usability, 95% of the individuals would recommend the platform to a colleague, so he really felt that all of those things were driving us in the right direction. So these are the primary research aims, and these are our findings. There was a difference in the performance that was statistically significant between the L.A. and traditional assessment group, in scoring the item on first versus second attempt. So we saw a bit of a difference, but if we counted that second answer is correct, and we give them credit for getting it correct, in total, moved up to a level commensurate with what we are seeing and what we have seen with CRNAs who have taken the traditional assessment to date. The average ratings are perceived higher on self-reported agreement scales on the L.A. versus the traditional assessment. And the feedback on L.A. was overall positive, eliciting above average usability. Leaf suggested these findings suggest it is a feasible and usable format in the future. Was the future for our CPCA program? We have had a lot of feedback over time, most of it good and useful, and probably, like many of you, feedback is always solicited or elicited and some comes on its own, but we have heard that our current program has cycle lengths asking them to do things at different times. They find this incredibly confusing and, honestly, as a fellow certificant, I understand and agree with that. We are moving to a repeated four year cycle with the same requirements in each cycle that an individual goes through. So what we are going to have is 60 credits, much like the current program, the 40 class B credits, again, like the current program, and individuals will have to meaningfully -- we have a definition, meaningful participation over a 4-year period. So we are transitioning from the current traditional assessment of continued professional certification assessment to using longitudinal assessment in terms of measuring knowledge of CRNAs who desire to have continued certification. And one thing they are removing from our program is we had a component called the core modules, which was really four domain areas of focus learning that all CRNAs were asked to do. The goal is to infuse contemporary knowledge into the profession and keep us all within a certain realm and level. Those tools, despite having wonderful ideals, we felt did not materialize to their full benefit, so we are removing that as a requirement. However, individuals, vendors and the space who spent the time and effort will likely see those mechanisms repurposed to other CEUs and probably class A credit. With that, I want to stop and say thank you very much for the opportunity to present today. I look forward to answering any questions you have during the live Q&A, and I just want to make a side point of saying that the research study, the randomized controlled trial I've talked to you about today, has been accepted for publication and will be published in the practical assessment research and evaluation Journal at some point in 2024. However, we haven't heard exactly what issue it is going to be published in. But it will be published in 2024, so you will be able to delve into these findings of randomized controlled trial at a deeper level once that is published. Again, I want to thank you for the opportunity to speak with you today and I would like to take any questions that you have now. >> Michelle: Thank you so much, Dr. Gill, for your presentation and sharing your study results, and talking with us about your innovative approach to recertification. We do have some questions, so we are going to jump right in. What kind of feedback did you receive from participants regarding the immediate feedback feature of the CPCA/LA platform, and how did this feedback influence their learning process? >> Christopher: For sure. The immediate feedback as well as the convenience features that are inherent kind of within the platform itself were well regarded by the participants. They said that was something that could really make a difference in terms of day-to-day and maintaining a fund of knowledge. There is certainly a number of aspects of adult learning theory that is different then when

you are going through grade school, through collegiate. So I've touched on a number of them, but really we want to make people aware of areas that they may have opportunities for improvement, really, as adults we have an illusion of knowing. We think that we have a greater fund of knowledge and certain topical areas and maybe perhaps we do. So by putting that information in real time in front of practicing clinicians, we think we'll move them to the next level. >> Michelle: Terrific, thanks. Next question. How have the recertification changes affected CRNA costs related to recertification? Secondly, I clinicians reporting increased CE costs or time burdens associated with maintaining their certifications? >> Christopher: Absolutely. From the kind of legacy program to the current continued professional certification program, there was a change in the cost component. So I'm not going to mince words on that one. In hearing feedback from our certificants, Liv understood that the pain point for them, and we have sought to reconfigure and reimagine our programs with cost and value in mind. So, as we moved to the new program, which we are going to end up having a new name for, we have sought to really control costs at a point where they are kind of just on par with cost-of-living increases. We have increased the cost of the program. So we think we will be able to enhance the value the end user is going to see and received without really seeing a significant increase in cost. In relation to CE costs, it is quite varied, actually. I will say that. Where you working where you practice, you may have continuing medical education funds available to you. Your employer may provide a class A, the CE that we see as being costly in terms of per credit cost. So there's kind of a great variety in that. There certainly was a bit of an increased cost going from 40 to 60 CEUs, but as we increase the length of the certification cycle, we felt that was the right thing to do. >> Michelle: Thank you. Next question. You had mentioned that one of the issues that was an impetus for you doing this work and looking at changing the assessment process had to do with the evolution and the development of new technologies. Can you discuss that further? Were there particular technologies? We talked about AI earlier today. Can you talk about some of those new technologies that you observed evolving that prompted you guys to take this step? >> Christopher: Sure. I think, fundamentally, the Board of Directors and the staff at the organization has explored, I would say, in a very academic-minded manner, what is out there. First you have to understand the question I talked about at the outset of the presentation. What are the ideals we are seeking to achieve and meet? For the practicing clinician, that is markedly different than someone who is entering the profession for the first time. We explored a number of different aspects, whether it be simulation lab, virtual-reality, augmented reality to some degree. So it is getting the cost and value proposition, I think, perfectly correct -- or at least as correct as you can -- in that moment that is the hardest part. As longitudinal assessment platforms have matured, where individuals can do questions, there are security safeguards in place, like a permanent time clock or other kind of security features that prevent loss of intellectual property, as those technologies have matured, we have really followed closely with those vendors. We saw this as the right time to remove that technology, because we think it is getting closer to the stated goal of enhancing provider quality and maintaining patient safety. >> Michelle: Thank you. Next question. How did technology play a role in facilitating or hindering the effectiveness of the CPCA/LA platform? And what improvements could be made to enhance the user's experience? >> Christopher: Share. The positive things that people have reported on where the convenience functionality. That they can do questions anywhere, at any time, as long as they can access a device that is supported. The immediate feedback is highly sought after. We want to know what we didn't get right, and we want to have the time to go and research that when -- usually right after. We don't like not knowing something, especially when we are taking care of patients. So that immediate feedback coupled with providing rationales was advantageous, and people saw this being highly favorable. The nonpunitive nature of the system was also something they highly regarded. Things they kind of reported that they felt created some stress where the one minute of time per question

that maybe made them feel a little bit rushed. We think over time there's going be a more positive assimilation of that, where you are not really having to think. It is walking around knowledge we are trying to capture, that we feel confident that one is correct. The study findings confirmed that 97% of participants were able to answer the question in around 30 seconds. So we are getting around that knowledge. The software platform and technology we have used has an advanced functionality where the end user has to click, yes, I want to answer the next question. That was kind of frustrating for some individuals, but we see that as being something we want to leave in place, because you might be answering questions and get interrupted, and we don't want individuals to get unfairly docked in terms of points. They are going to the next question, they have to select that. So that was another pain point. We are going to grow the functionality where the end user can see statistics and metrics that talk about areas of strength and weakness. From a topical and domain level, that is something that we have. They do have that functionality today, but we see that as being the potential for enhancement in the future where we may take it to the point to create kind of a personalized grid where the end user can go to CE vendors and say, look, my certifier and my maintenance of certification program, my L.A. results, show this. What do you think you can do in terms of creating a personalized CE plan for me? I do think, overall, highly positive enhancements in the future, and this is something we are all going to be tracking closely in the space. Sorry, a little long-winded. [L[Laughs] >> Michelle: No, that was terrific. Thanks, Chris. I think you are giving us a lot to think about and an entirely different way to look at these processes. We have kind of a comment, it's a quote. "People gravitate toward learning what they don't need." You said that. And she says -- the person says, "this certainly resonates. It's all about what I can get for free rather than reflecting on gaps of knowledge. And this is from the perspective of a state that requires CE for nurses." This is what the comment is. So someone agreeing with your previous comment. I think that is about the end of our time. Thank you again, Dr. Gill. This was incredibly interesting, and we look forward to seeing your work and how your organization moves us forward. Thank you so much. >> Christopher: Wonderful. Thank you.