

Advanced Multimodal Communication Curriculum for Pediatric Residents

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ABSTRACT

BACKGROUND: Medical educators juggle competing demands as they seek to integrate medical advancements and new technology with the call for earlier introduction to clinical experiences. Newer models of medical education place even greater emphasis on the importance of deliberate training of providers who can deliver compassionate patient-centered care. The need for adaptable, effective communication skills training has never been more relevant than now, in our high-tech and ever-evolving learning climate.

METHODS: At a large pediatric academic center, we used Kern's six-step approach to complete a needs assessment, identify goals and learning preferences of trainees, and ultimately develop and evaluate a multimodal communication curriculum. This curriculum was rooted in the Accreditation Council for Graduate Medical Education's Pediatric Milestones, with the goal of enhancing knowledge, skills, and competency. Pediatric interns were randomized to either the new curriculum ($n=19$) or the existing didactic-based communication training ($n=17$) from 2019 to 2020. We evaluated the impact of the new and traditional curriculum through evaluations by expert facilitators, learner surveys, and faculty-assigned resident milestones.

RESULTS: Many trainees self-identified performance gaps in communication skills at baseline. Eighteen residents attended 1 to 6 in-person deliberate practice workshops. Workshop participation by the residents varied over time due to a variety of factors. All residents, regardless of curricular exposure, showed statistically significant improvement in communication milestones from first to second year and those enrolled in the deliberate practice curriculum highly valued the workshops and coaching.

DISCUSSION: Our curriculum demonstrates the value of deliberate practice opportunities for residents to gain skills in advanced communication. Residents appreciated this type of training and the time devoted to expand these skills. Lessons learned and barriers to implementation from this curriculum can be helpful for educators interested in integrating active, deliberate practice, simulation-based communication training into their current educational model.

KEYWORDS: pediatrics, residents, simulation, communication curriculum, breaking bad news

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Background

The American College of Graduate Medical Education (ACGME) milestones are a set of competency-based assessments for graduate medical education training programs. One primary focus of these milestone assessments is interpersonal and communication skills, and competency in this area is critical for the successful completion of residency training and for future medical practice. There is no consensus on the most efficient or impactful way to promote the development of lifelong communication skills in trainees.¹

In the last decade, educational efforts have focused on developing strategies to address challenges unique to difficult communication in pediatrics. Many of these novel curricula have enrolled resident trainees, but few compare new and existing curricula.^{2–4} Educational frameworks are often both anchored in one or two different modalities of learning and lack a multimodal strategy.^{5,6} Additionally, many curricular outcomes are

assessed through a single type of performance metrics such as an Objective Structured Clinical Exam (OSCE), standardized patient encounter, or self-reported Likert scale.^{4,7}

To test a communication skills training program in the delivery of difficult news and address these gaps, in September 2018 we launched a multimodal, innovative, deliberate practice-based curriculum focused on inpatient pediatrics. We developed a longitudinal curriculum focusing on advanced physician-patient communication skills in challenging conversations, using Kern's 6 steps for curriculum development.⁸ We anchored our curriculum in two main educational theories: (1) Ericsson's Theory of Deliberate Practice, in which learners are provided opportunities for practice (repetition of skills) with feedback from expert coaches; and (2) Bandura's social cognitive theory, which suggests that individuals learn best via observation with immediate opportunities to model or imitate this behavior.⁹ We chose to include multiple modalities of learning,



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as recent studies have shown that the integration of different modalities is both effective and preferred by learners.^{10,11}

We strove to create an evidence-based, adaptable, and application-oriented training program, and compared this to the existing communication curriculum at our institution using several different outcome measures. We initially explored how this curriculum impacted the patient experience.¹² We then compared these patient-centered outcomes to trainee ACGME milestones specifically anchored in communication skills (problem-based learning, professionalism, and interpersonal communication). Lastly, we assessed the perceptions of the residents regarding this new training program.

Here, we describe the development, implementation, and learner-centered outcomes of this curriculum. We also share lessons learned and offer suggestions for adaptation in the context of pandemic or virtual situations.

Methods

This study was approved by the institutional review board. Our residency program provides education for more than 160 pediatric, internal medicine/pediatric, and combined pediatric residency program trainees during each academic year. Our free-standing children's hospital has >500 inpatient beds and conducts >100,000 ambulatory pediatric visits per year. Trainees work in two major referral centers, have complex schedules, and balance educational and clinical obligations. The existing traditional curriculum included an annual educational session in communication skills.

Literature review

We first completed a comprehensive literature search in PubMed, Ovid, Scopus, and MedEdPortal of communication training centered around difficult conversations. We specifically looked at those curricula which were published in the last 10 years and addressed the educational strategies and challenges unique to the delivery of difficult news in pediatrics. (Table 1) We used these results to identify themes central to effective advanced communication skills training.

Needs assessment

Next, we compared the traditional residency curriculum with relevant ACGME competencies (problem-based learning, professionalism, and interpersonal communication) to identify areas for improvement. Then, we compiled these results into a resident survey, which was critically reviewed, edited by faculty experts, and distributed to our first-year residents (Appendix A). The results of this survey were used to develop a resident focus group where we more deeply explored concepts identified in the survey and elicited preferences for content and format of communication curriculum (Tables 2 and 3).

Educational content development

After integrating data from the resident survey, resident focus group, and feedback from residency leadership, we developed a multimodal longitudinal communication curriculum. We elected to incorporate several different modalities of learning to help with the solidification of skills and engagement of learners.¹³ Combining small group role play and simulation can be an effective way to allow learners to practice communication skills in a time-efficient manner.¹⁴ Although prone to limitations in authenticity and realism, simulations can provide intentional practice and avoid some of the unpredictability and anxieties of real-time clinical encounters.^{4,14}

Six case-based workshops were built incorporating relevant ACGME competencies including PBLI4 (Problem-Based Learning), PROF1 (Professionalism), PROF2 (Professionalism), ICS1 (Interpersonal Communication Skills), ICS2 (Interpersonal Communication Skills)). Topics for the workshops were chosen based on resident requested content - teen pregnancy, abnormal newborn screen, sexually transmitted infection and sexual abuse, leukemia suspicion, non-accidental trauma, and withdrawal of life support. The content was built around the delivery of difficult news on these topics using the Take the HEAT framework- hear my out, empathize, apologize and take action. This model was developed at the Ohio State University to set the stage, deliver sensitive information, de-escalate emotionally charged situations, and empower patients in shared decision-making for conflict resolution.

The curriculum was reviewed and critically edited by the research team, which included content experts in professionalism, biomedical ethics, and graduate medical education. It was also sent for external review to two faculty at other academic institutions who had both experiences in resident education and curriculum development surrounding the delivery of difficult news. These faculty members also held advanced degrees in medical education and leadership roles within residency programs.

Educational workshop implementation

Educator Training. A minimum of two faculty with expertise in either sharing life-altering news or medical education facilitated each workshop. We used a standard method for the delivery of difficult news, Take the HEAT,¹⁵ and provided an associated grading rubric.⁵ We developed a facilitator instruction guide (Appendix B) and standardized patient case and guide (Appendix C) for each workshop.

Before each workshop, faculty facilitators completed a 30-min in-person training session to orient them to workshop format, their role, and expectations for themselves, the standardized patient (SP), and the trainees.

Participants. In the 3 months prior to the first workshop, first-year residents were assessed by patients and families during

Table 1. Relevant Literature in Difficult Communication Skills.

PAPER/ AUTHOR (YEAR)	SUBJECT NUMBER (RESIDENTS)	DESIGN	LOCATION	BASIS	LEARNING STRATEGY	REPORTED OUTCOMES
Wolfe et al (2016)	NR ^a	Interns, not randomized	Inpatient and outpatient	Modified SPIKES ^b	Didactics, simulation, workshops	Experiential data (5-point Likert scale)
Hilgenberg et al (2019)	84	All residents, randomized	Unspecified	De-escalation curriculum	Didactics, simulation	SP ^c rating and resident self-assessment pre/post OSCE ^d
Peterson et al (2016)	84	All residents, not randomized	Unspecified	Resident communications skills curriculum	Didactics, simulation	OSCE (Gap-Kalamazoo), faculty evaluations, milestones
Delacruz et al (2017)	33	Interns, not randomized	Inpatient and outpatient	Take the HEAT ^e	Workshop, simulation	SP rating pre/post workshop
DeBlasio et al (2018)	68	All residents, randomized	Outpatient	Parent feedback communications curriculum	Didactics, feedback	CAT ^f scores pre/post didactics
Rassbach et al (2019)	114	All residents, randomized	Inpatient	Patient and family feedback tool	Feedback	CAT scores and resident self-assessment pre/post coach intervention
Peterson et al (2012)	36	All residents, not randomized	Unspecified	Difficult news communications curriculum	Simulation, feedback	Pre/post resident self-assessment
Tobler et al (2014)	33	All residents, not randomized	Unspecified	Breaking bad news workshop	Didactics, simulation	Pre/post workshop OSCE, resident surveys
Reed et al (2015)	29	Interns, not randomized	Inpatient	GRIEV_ING ^g Death Notification Protocol	Didactics, simulation	Pre/post and 3 mos. post-intervention performance scores
Nikendei et al (2011)	28	All providers, randomized	Outpatient	Parent–physician communication skills training	Simulation, feedback	Post-intervention OSCE, pre/ post resident self-assessment

^a Not reported.

^b Setting, Perception, Involvement, Knowledge, Emotions, Summary.

^c Standardized patient.

^d Objective Structured Clinical Examination.

^e Hear, Empathize, Apologize, Take action.

^f Communication Assessment Tool.

^g Gather, Resources, Identify, Educate, Verify, _ give space, Inquire, Nuts and bolts.

their inpatient experience using the communication assessment tool (CAT).¹² Residents were then randomized into the new multimodal curriculum ($n = 19$) or the existing traditional curriculum ($n = 17$). Next, we offered residents in the intervention cohort the opportunity to attend up to six additional educational workshops. These residents were also given the individualized patient/family performance feedback in the form of a confidential email (Appendix D) following the first workshop.

Standardized Patients. Our institution has a pool of standardized patients (SP) who are trained to recreate the personality, emotional structure, and response patterns of an actual patient and are familiar with working with residents. We recruited SPs from this pool through the program's coordinator. In addition to their prior SP training, our SPs completed a 60-min pre-workshop rehearsal to review learning objectives for each case,

as well as the intended emotional responses or body language for specific roles.

Setting and Delivery. Workshops took place in a large meeting space before the COVID-19 pandemic. The room accommodated a maximum of 10 residents, 2 standardized patients, and 2 expert faculty facilitators. We used a whiteboard or easel stand with paper to record themes and questions from part one of the workshop. We preferred round table seating to help facilitate discussion during the second portion of the workshop.

Given the complexities of resident schedules, we modified our workshop offerings to accommodate trainees during implementation. Occasionally, we repeated workshops during the month and offered them on different days or times in an attempt to increase resident attendance.

Table 2. Residents' Self-reported Previous Training and Experiences With Angry Families and Patients.

SELF-REPORTED LEVEL	CURRENT LEVEL OF PERFORMANCE WHEN DIRECTLY INTERACTING WITH ANGRY FAMILIES/PATIENTS	PRIOR TRAINING WHEN DIRECTLY INTERACTING WITH ANGRY FAMILIES/PATIENTS	PREVIOUS EXPERIENCES WHEN DIRECTLY INTERACTING WITH ANGRY FAMILIES/PATIENTS
Novice-beginner/ no prior training or experience	4 (8.33%)	0 (0%)	1 (2.08%)
Competent/little training or prior experience	21 (43.75%)	20 (41.67%)	6 (12.50%)
Proficient/some prior training or experience	20 (41.67%)	28 (58.33%)	36 (75.00%)
Expert/extensive prior training or experience	3 (6.25%)	0 (0%)	5 (10.42%)

¹Most frequent values are indicated in bold.

Workshops were designed as a 4-part structure (Figure 1) based on the approach outlined by Fernandes et al, which has shown to be effective in teaching ethics.¹⁶

Part 1: Take the HEAT Didactic (5-10 min): We focused the overview discussion on the "Take the HEAT" model Hear me out, Empathize, Apologize, Take action.⁴ This mnemonic was initially developed as a strategy to improve patient satisfaction, however, it offers an effective communication template and helps to build rapport in the healthcare setting.

Part 2: Shared Experiences and Faculty Facilitator Coaching (10-15 min): Residents are asked to share recent experiences involving challenging patient communications as a primer to the session. Engaging in a facilitated discussion allows for building of relevance, expert role modeling from faculty facilitators, and provides validation of residents' experiences by allowing them to compare potential solutions with other peers and teachers.

Part 3: Role Play and the Evolving Patient Encounter (15 min): The residents worked in small groups with one standardized patient to role play a case. Each resident had a distinct role in the evolving case and participated in a portion of the simulated patient encounter in rapid cycle deliberate practice. Standardized patients/parents used scripts to guide the case. When the residents were not in active role play, they were asked to observe each other and keep note of strengths and areas for improvement based on the "Take the HEAT" rubric.

Part 4: Communication Skills Feedback (10 min): At the end of the session, we conducted a whole group and feedback session based specific observations during the role

Table 3. Thematic Analysis of Prior Training or Experience in Difficult Conversations.

THEME	RESPONSES REFERENCING THEME (N = 35)	REPRESENTATIVE QUOTES
Face-to-face interactions with families	17 (48%)	"Several times had to have difficult conversations, calm down angry or anxious parents, explain test procedures and reasoning, not always successful, but most of the times" "I have had experiences on the fly, while in residency (less so medical school) when called to rooms with escalating parents, or parents did not like the plan"
Training using simulation or standardized patients	15 (43%)	Many residents mentioned OSCEs or simulated patient encounters
Training through formal communications curriculum	8 (23%)	"I had the communication training at last intern year's retreat. That one was so helpful. We practiced different scenarios, angry parent, sad parent"
Little to no formal training	7 (20%)	"I did not have much formal training in this area in medical school..."
Received performance feedback	2 (6%)	"We received training with standardized patients at our school in relation to this very issue and we're given constructive feedback based on our performance."
Personal non-medical experience	2 (6%)	"Medical assistant" "Worked at a hotel with a lot of very demanding guests."

play. Standardized patients, facilitators and peers were asked to give constructive comments on performance. At the conclusion of the case residents were given a list of major take home points and closing feedback to be used in other encounters.

Assessment of curriculum

We evaluated our curriculum using post-workshop resident surveys, ACGME milestone data, and pre- and post-intervention patient family feedback.

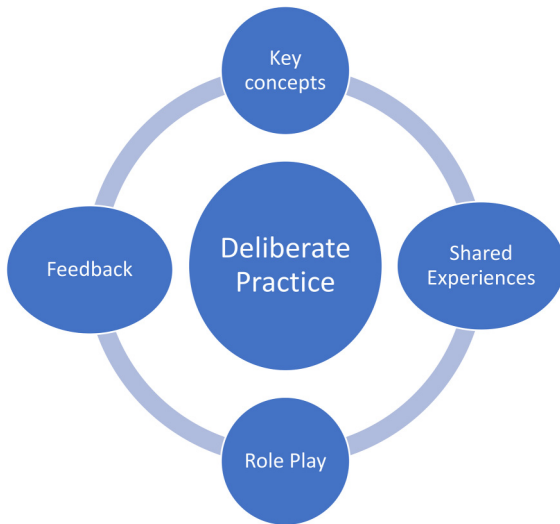


Figure 1. Four-part workshop structure. (1) Key concepts: A brief overview of fundamental concepts of effective communication; (2) shared experiences: opportunity for residents to confidentially and voluntarily discuss recent challenging encounters; (3) role play: an evolving patient encounter with a standardized patient (SP) and the trainees participating in the role of the physician; and (4) feedback: opportunity to debrief evolving patient encounters and receive individualized feedback.

After each workshop, residents received a de-identified electronic survey with 3 qualitative questions regarding content and utility, 4 quantitative questions on format, and 1 with both components on approachability and engagement (Appendix E). The survey was piloted on a group of senior residents before its use in the curriculum to ensure clarity and consistent understanding among participants.

Resident milestones in the relevant competencies between December of the first year and December of the second year were analyzed for each resident by paired t-test, with significance defined as $p < .05$. We additionally compared ACGME milestone scores of residents randomized to receive our new curriculum with those randomized to the existing traditional curriculum. We also assessed potential relationships between workshop attendance and milestone performance.

Table 4. Resident Feedback From Workshops.

SELECTIVE QUALITATIVE RESIDENT REMARKS
<ul style="list-style-type: none"> • “I actually had the same question [‘Is my kid going to die?’] with a real parent and I felt more ready for this question” after the workshop • “I wish I had these workshops earlier in my intern year • “This was an opportunity to have 1:1 directed feedback.” • “[I] used skills I learned here to prepare myself before walking in the room for difficult encounters.” • “[The curriculum] helped with my areas of weakness; I felt better prepared to talk to adolescents.” • “I found it easier to participate in a small group setting.” • “I think time spent on how a faculty member would go through the entire interaction is very helpful.”

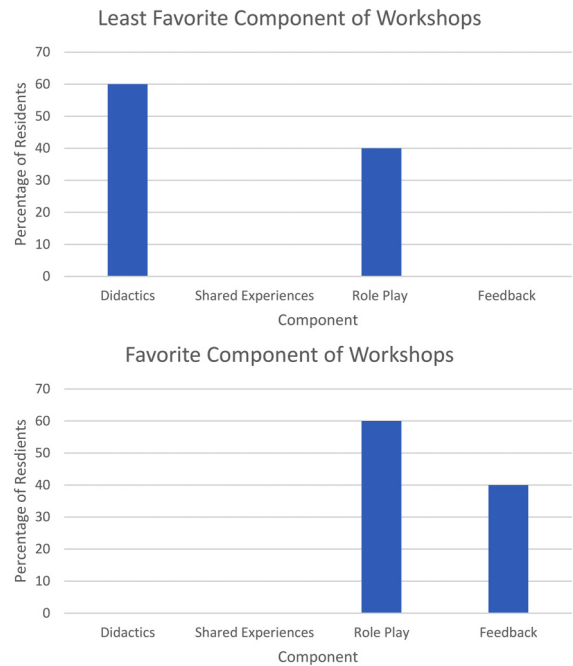


Figure 2. Most and least enjoyed components of workshops.

Results

Post-workshop quantitative and qualitative resident surveys

Residents attended up to six in-person workshops (average, 1-3). Eight residents attended the first workshop, 9 attended the second, 7 the third, 5 the fourth, and 4 attended the fifth and sixth workshops.

Residents who attended the workshops provided uniformly positive feedback on their experience. Residents commented on the high value of receiving individualized performance evaluations in a safe, low-pressure environment and the opportunity to apply learned skills to real-life difficult patient encounters. (Table 4) Residents particularly enjoyed having direct coaching with a faculty facilitator and often preferred this portion of the workshop over the didactic section (Figure 2). Residents had mixed reviews on the simulation portion of the workshops, some enjoying the opportunity for frequent repetition and practice, others finding this portion intimidating. Residents also remarked on the lack of protected academic time as a barrier for session attendance. Many shared that they would have attended more sessions if they had dedicated time to do so.

ACGME milestone evaluations

In comparing ACGME milestone scores between residents randomized to our curriculum versus those not, all residents showed significant improvement from first to second year in relevant competencies (Figure 3), regardless of curricular exposure. There was no statistical improvement between the control group and the intervention group over the course of the year

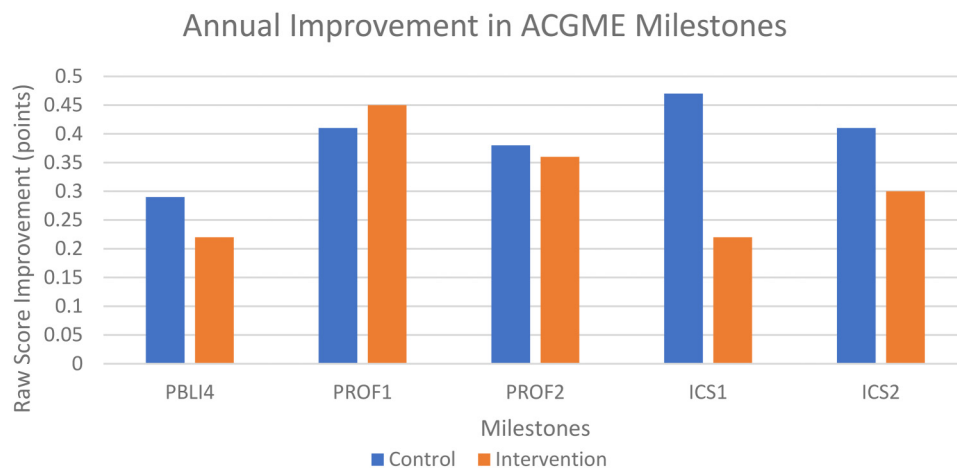


Figure 3. Raw score annual improvement in control and intervention groups in relevant ACGME milestones.

(*p*-value (confidence interval) PBLI4 .43 (−.13-.29), PROF1 .58 (−.26-.15), PROF2 .60 (−.16-.27), ICS1 .81 (−.21-.26), ICS2 .83 (−.23-.29).

Given the variable engagement with our curriculum, similar to our patient-level outcomes,¹² we were not able to demonstrate any correlation between the number of workshops attended and milestone improvement.

Discussion

Our Advanced Communication Skills curriculum offered a multimodal approach to communication training for pediatric residents, anchored in deliberate practice opportunities, small group learning, and assessments such as ACGME milestones. Pairing the conceptual frameworks of deliberate practice and social cognitive theory with the preferences of residents for developing communication skills in authentic settings helped establish relevance for learners. Our workshops provided a time-efficient way for learners to apply and practice communication skills, in a safe environment, with a shared standardized patient, a model which has been shown to be effective in teaching ethics.¹⁶ Residents also emphasized the importance of multimodal educational opportunities which have been recently employed in many facets of medical education.^{11,13} Importantly, this experience did not require a large expenditure of faculty time and resources. In addition, residents valued an opportunity to observe peers and receive instant, formative, and individualized feedback on a challenging skill.

We learned several lessons during the implementation of this curriculum. Ensuring consistent participation was our biggest challenge, despite using a needs assessment and resident preferences to guide multimodal curriculum development. Although residents were engaged in the development of the curriculum, our residents faced competing for clinical and academic demands that hindered full participation in the educational sessions. Attendance was encouraged,

though optional—a variable which other institutions may choose to modify.

Although residents in both cohorts (multimodal workshop vs. didactic curriculum) demonstrated performance improvements in ACGME milestones from first to second year, there was no significant difference between residents based on their curricular exposure. Several factors could explain this finding. One possibility is that the milestones 5-point scale limits the ability to discriminate smaller differences in performance, differences which may have been detected with another assessment tool.¹⁷ Additionally, milestone scores are sometimes assigned by faculty who have limited exposure to residents practically applying relevant communications skills.¹⁸ ACGME milestones are likely best interpreted in the context of faculty review of narrative feedback, direct observation, and patient–family assessments of learners (eg, a multi-source feedback approach to communication).¹⁹ As we noted in a previous report, patient/family evaluations of communication skills of our residents demonstrated greater improvement of communication abilities over time with this educational program.¹²

Lastly, the relatively low and variable participation in our workshops may also contribute to the lack of differences in milestone scores between groups. Further evaluation of this curriculum, perhaps where trainee attendance is better facilitated and accomplished, would be useful to further understand the impact on resident communication skills and overall personal and professional development.

Our institutional experience during the COVID 19 pandemic has been that virtual platforms increased overall conference attendance. While this curriculum was conducted in person, it could easily be adapted to a virtual format, highlighting its utility in light of the need for telemedicine training and flexible modes of providing education. As this pandemic has limited face-to-face interactions and opportunities for direct patient care, opportunities to apply and practice communication

skills, perhaps in a virtual format, become even more important in preparing the next generation of physicians.

Conclusions

We believe our communications curriculum has many advantages over traditional models because it teaches *the right thing* (patient-centered communication) *in the right way*. The ultimate goal of clinical education is not memorization, but rather understanding and long-term application, solidified through multimodal learning strategies. Our curriculum provided residents high value opportunities to practice the knowledge and skills necessary to be competent communicators, putting patients in the driver's seat and empowering families through shared decision-making. The very positive qualitative comments about the workshops from the intervention group indicated satisfaction above what was reported from the didactic-based communication curriculum. In summary, communication competency is recognized by the ACGME as essential as we prepare trainees to effectively provide patient-centered care. As residents are faced with ever-evolving clinical and educational demands, we must explicitly emphasize and re-affirm practical communication training for residents early in their careers.




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Author Contributions

Marsh, Reed, Mahan, Fernandes, and Lauden conceptualized and designed the study, drafted the initial manuscript, and approved the final manuscript as submitted. Dr Liao, Dr Spears and Ms Schneider assisted with curriculum development and the data collection, critically reviewed the manuscript and approved the final manuscript as submitted.

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Supplemental material

Supplemental material for this article is available online.

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