

A Curriculum to Improve Residents' End-of-Life Communication and Pain Management Skills During Pediatrics Intensive Care Rotation: Pilot Study

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Abstract

Background Research suggests pediatrics practitioners lack confidence and skills in the end-of-life (EOL) care.

Objective This pilot study explored the impact of a curriculum designed to prepare future pediatricians to manage pain and provide comfort for children and infants with life-threatening conditions and to be more confident and competent in their EOL discussions with families.

Methods Participants included 8 postgraduate year (PGY)-2 residents in the study group and 9 PGY-3 residents in a control group. The EOL curriculum included 4, 1-hour sessions consisting of didactic lectures, videos, and small-group, interactive discussions. Topics included discussing EOL with families, withdrawal of care, and pain assessment and management. Curriculum evaluation used an objective structured clinical examination (OSCE), self-assessment confidence

and competency questionnaire, and a follow-up survey 18 months after the intervention.

Results The OSCE showed no statistically significant differences between PGY-2 versus PGY-3 residents in discussing EOL issues with family (mean = 48.3 [PGY-2] versus 41.0 [PGY-3]), managing withdrawal of care (mean = 20.9 [PGY-2] versus 18.91 [PGY-3]), and managing adolescent pain (mean = 30.97 [PGY-2] versus 29.27 [PGY-3]). The self-assessment confidence and competency scores improved significantly after the intervention for both PGY-2 residents (0.62 versus 0.86, $P < .01$) and PGY-3 residents (0.61 versus 0.85, $P < .01$).

Conclusions An EOL curriculum for PGY-2 pediatrics residents delivered during the intensive care unit rotation is feasible and may be effective. Residents reported the curriculum was useful in their practice.

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Editor's Note: The online version of this article contains a table describing end-of-life curriculum sessions.

Introduction

Evidence suggests that pediatrics practitioners appear to have lower confidence and skills in end-of-life (EOL) care when compared with their counterparts in adult medicine.¹⁻³ Despite recognizing the need to incorporate EOL education and palliative care into residency,⁴⁻⁶ most pediatrics programs do not have a formal curriculum in EOL, especially in institutions where a pediatric palliative care service is not available.

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Studies on EOL care⁷⁻¹⁰ revealed that most pediatrics practitioners and staff feel they lack experience in EOL procedures and would welcome more training. Pilot studies in pediatrics, using 6 hours of EOL topic discussion,¹¹ and in adult medicine, with resident exposure to hospice care,¹² showed improvement in residents' knowledge, confidence, and skills, and favorable ratings from participants.

Most pediatric mortality and morbidity occur in the intensive care units, so we chose the pediatric intensive care unit (PICU) to pilot an EOL intervention. The goals of the project were to design and implement a competency-based EOL curriculum for postgraduate year (PGY)-2 pediatrics residents during their PICU rotation and to evaluate the curriculum using an objective structured clinical examination (OSCE).

Methods

Subjects and Study Design

The study subjects were PGY-2 (n = 8) pediatrics residents who participated in the EOL curriculum during the 2009–2010 academic year. The curriculum was presented during their first month of PICU rotation, and PGY-2 residents were evaluated using a 4-station OSCE during their second rotation. The PGY-3 residents (n = 9) had rotated in the PICU the year before implementation of the EOL curriculum, and they served as the control group. The PGY-3 participated in the study's OSCE and received the EOL curriculum after the study was completed.

EOL Curriculum

The curriculum focused on domains identified as important in delivering effective EOL care.^{13,14} The goals were to improve residents' confidence and ability to (1) conduct EOL conversations with parents, (2) manage withdrawal of care, and (3) assess and manage pain. Topics included effective communication using the SPIKES protocol (2 hours),¹⁵ personal coping (1 hour), and pain management in children with terminal illnesses (1 hour). The curriculum is provided as online supplemental material.

Sessions were held weekly at a time that allowed both day- and night-shift residents to participate. Teaching methods included short didactic lectures, small-group discussion using videos,¹⁶ role play, and reflection.

Evaluation Design

OSCE Station Development A 4-station OSCE measured residents' ability to (1) deliver bad news and discuss poor prognosis (2 stations), (2) manage withdrawal of care, and (3) manage pain in an adolescent patient. The first 3 case scenarios were developed as a continuous event from delivery of bad news to withdrawal of care in a 1-year-old victim of near drowning with hypoxic encephalopathy. The fourth case scenario was an adolescent male diagnosed with

a brain tumor requiring pain management. The standardized patients were trained by 2 faculty physicians to promote consistency in the emotional responses.

The OSCE sessions were videotaped and replayed at the end of each scenario for debriefing with both the PGY-2 and PGY-3 groups. The OSCE checklists were completed by 2 standardized patients, 2 child life specialists, a nurse, and a general pediatrician. The OSCE performance was assessed using a checklist previously validated for simulated EOL family conference at the surgical residents' intensive care unit rotation, developed at the University of Minnesota,¹⁷ with modification for scenarios 1 and 2. For scenarios 3 and 4, the rating tool checklists were designed by the principal investigator (A.M.A.) based on knowledge and behaviors related to communication skills and pain management that can be measured during an OSCE. Three-point scales were used (3 = done; 2 = partially done; 1 = not done).

Questionnaire Development We designed and administered a self-assessment confidence and competency (SACC) questionnaire to all PGY-2 and PGY-3 residents before the curriculum and after completion of the OSCE. The 19-item questionnaire asked residents to self-rate their confidence in managing EOL care using a 5-point Likert scale.

A postintervention survey with no prior validity evidence was used to determine participants' perceptions of the usefulness of the EOL training to their practice. The survey was e-mailed to all 17 residents 18 months after the end of the academic year. It contained 5 items measured on a 3-point Likert scale (very useful, useful, not useful). An open-ended item invited comments and suggestions.

We used intraclass correlation coefficients to measure the reliability of the OSCE rater. Effect size estimates were used to test for differences in mean OSCE scores, and the Wilcoxon signed rank test was used to test whether residents' SACC scores improved following the EOL curriculum and OSCE debriefing. We also compared PGY-2 and PGY-3 SACC scores before the implementation of the curriculum for PGY-2 residents and after the OSCE and faculty debriefings to determine whether EOL training and OSCE feedback affected residents' confidence scores. Tests were conducted using the SPSS 15.0.1 software (IBM Corporation, Armonk, NY).

The Cooper University Hospital Institutional Review Board approved the study.

Results

OSCE

Intraclass correlation coefficients for the 3 major OSCE outcomes were EOL conversation (14 items, 0.901); withdrawal of care (12 items, 0.601); and adolescent pain management (9 items, 0.788). No statistically significant

TABLE	BEFORE AND AFTER SELF-ASSESSMENT CONFIDENCE AND COMPETENCY RESULTS FOR POSTGRADUATE YEAR (PGY)-2 AND PGY-3 RESIDENTS			
		PGY-2, Median (IQR), n = 8	PGY-3, Median (IQR), n = 9	P Value ^a
	Before test	0.62 (0.57–0.72)	0.61 (0.53–0.70)	ns
	After test	0.86 (0.78–0.97)	0.85 (0.78–0.94)	ns
	P value	<.01	<.01	

Abbreviations: IQR, interquartile range; ns, not significant.

^a Wilcoxon signed rank test.

differences in OSCE performance was found between PGY-2 residents (n = 8) and PGY-3 residents (n = 9) for discussing EOL issues with family (mean = 48.31 versus 41.03); managing withdrawal of care (mean = 30.97 versus 29.27); and managing adolescent pain (mean = 20.90 versus 18.91). A retroactive power analysis with $\alpha = .05$ indicated the study was underpowered (power = .36).

SACC Responses

Comparison of pre-SACC and post-SACC scores using the Wilcoxon signed rank test showed significant gains in confidence scores for all categories for PGY-2 residents (0.62 versus 0.86, $P < .01$) and PGY-3 residents (0.61 versus 0.85, $P < .01$). However, no significant differences were observed between PGY-2 and PGY-3 residents' median SACC scores (TABLE).

18-Month Follow-Up Survey

Twelve of 17 residents (71%) responded to the survey. All reported that the curriculum was useful in their practices (which included fellowship training, hospital- and community-based practice). Comments included, "Realistic experience with standardized patient encounter gave me a good start in my fellowship," and "Made me confident in speaking with family and patients, even if it is not EOL discussion."

Discussion

We successfully implemented an EOL curriculum for PGY-2 pediatrics residents that emphasized effective and compassionate communication in the context of family-centered care and sought to address apparent gaps in the care of terminally ill children.^{1,18,19} The pilot study showed that PGY-2 residents who received a 4-hour curriculum had, on average, higher OSCE scores than did residents in the control group of PGY-3 residents, although statistical significance was not reached. Both PGY-2 and PGY-3 residents self-rated their comfort in communicating with patients and dealing with EOL issues significantly higher after completing the

OSCE. Because there were no significant differences in SACC scores for PGY-2s and PGY-3s, the increase in confidence for both groups likely resulted from participation in the OSCE with faculty debriefing. Although intended to evaluate the curriculum, the OSCE itself appeared to be an important component of the curriculum.

The study has several limitations. It was conducted at a single institution, and the results may not generalize to other pediatrics residency programs. Our survey tool lacked prior validation, and responders may not have interpreted the questions as intended, and 5 participants (29%) did not respond to the follow-up survey and may have had a different perspective on the EOL curriculum.

Future work should use a multi-program sample to increase study power and the generalizability of the findings.

Conclusion

An EOL curriculum is feasible to implement in a PICU rotation. Evidence suggested that the curriculum equipped residents to manage EOL conversations, withdrawal of care, and adolescent pain, and that the training was beneficial in their practice 18 months later. Follow-up at 18 months revealed that 12 residents (71%) who responded remembered the EOL training, and reported it was useful in their current practice.

The curriculum required 1 hour per week of faculty and child life specialists' time. We enlisted our institution's simulation center for the training session and OSCE. The overall cost of the intervention, including the cost of the standardized patient time, was approximately \$2,500. Finally, providing opportunity to practice EOL skills via an OSCE with faculty debriefing may positively influence residents' self-rated confidence in managing EOL issues in children.

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