

Review Article

Increasing Access to Care: Designing a Blended Curriculum to Educate Adult Hospice Nurses in Caring for Pediatric Patients

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Access to care for pediatric hospice patients is inhibited by a lack of providers specifically educated to care for pediatric patients. Education that seeks to address this gap in care must develop the specific knowledge and skills required to care for pediatric patients, and this education must also be delivered in a format that enables convenient access to providers. This article describes the development of an innovative blended curriculum to build upon the existing knowledge base and skill set required by experienced adult hospice care providers to expand care for pediatric patients. The article elucidates how the community of practice framework and Bloom's taxonomy informed the blended curriculum leveraging both online, asynchronous modules and virtual, synchronous precepting sessions and also informed the selection of content, activities, and assessment methods aligned to requisite competencies and skills. It also details the identification of requisite competencies and skills and the next steps in piloting this intervention.

1. Introduction

In the United States, the number of children dying has continued to decrease to the current annual rate of just over 40,000 children per year [1]. With improved survival, the number of children with complex medical conditions has increased. Over 500,000 children are living with a serious illness in the United States [2, 3]. Children with medical complexity are growing in numbers as survival rates improve for children with previously lethal anomalies [4–6]. Pediatric hospice and palliative care (PHPC) programs aim to optimize the patient experience through layers of support for children with serious illnesses and their families. Palliative care is appropriate at any age and at any stage of illness. For the purpose of this article, palliative care will be defined as a unifying umbrella for a comprehensive layer of support offered to patients with serious illnesses. The focus is often on promoting quality of life as the patient and family define and optimize symptom management. Hospice is

a community-based service that provides palliative care, including end-of-life care, in the home or inpatient unit.

Most children and their families prefer to spend time at home and avoid the hospital [7]. Yet, some are not given this option when community-based pediatric hospice and palliative care (PHPC) businesses deny care to children. Access to community-based PHPC is limited compared to the number of programs available for adults [4, 8]. The number of U.S. hospices that will accept pediatric patients is less than 20% [9]. The availability of PHPC needs to increase. No family should have to tell their child, “No, we can't go home.” So, how do we get to “Yes!”?

Ways to improve community-based PHPC services include regular pediatric palliative care education and forming collaborative relationships between acute care PHPC providers and community-based teams [10–13]. In short, we need to foster communities of practice [14] with the knowledge and skills to provide palliative and hospice care to pediatric patients. However, there are barriers to building

the requisite knowledge and skills, including educational funding for hospice providers, time available for continuing education, confidence in caring for the pediatric population, availability of pediatric mentors or preceptors for clinical experience, and understanding of different payment models for PHPC including concurrent care [11, 13, 15, 16]. Standard curriculums exist for education in the basics of pediatric palliative care, i.e., End-of-Life-Nursing Education Consortium (ELNEC)-pediatric palliative care [17, 18]. Yet, they are aimed at clinicians who have some experience in caring for pediatric patients but need more education on palliative and hospice care tenets. In late 2019, a multilevel (beginner, intermediate, and advanced) asynchronous curriculum was launched by the California State University for Palliative Care for hospice or palliative care providers practicing primarily with adults who are interested in expanding their practice to include perinatal patients, infants, children, adolescents, and young adults. However, this education does not necessarily address the needs of the adult hospice provider who may be reluctant to accept a pediatric patient (due to lack of experience) or who does not have the volume of patients to develop a complete program. These providers often decline to accept the pediatric patient. How can we provide a concise and effective curriculum that promotes confidence in accepting and caring for the pediatric patient, while negotiating the barriers to educational participation such as time, access, and funding? This article describes the theoretical frameworks and delivery structure contributing to a “blended” model for curriculum delivery to meet the needs of practicing clinicians. To our knowledge, this is the first continuing education to “blend” online asynchronous modules with virtual synchronous precepting for continuing education in PHPC. The delivery of the blended curriculum will support a regional community of practice, meeting the demand for more pediatric palliative care and hospice providers.

2. Blended Learning

Our first decision when designing a curriculum on caring for pediatric patients for practicing palliative care clinicians was the choice of a blended structure leveraging e-learning to deliver the curriculum. E-learning (electronic learning) methodologies are becoming increasingly popular in health professions and medical education, particularly when COVID-19 necessitated a shift from face-to-face learning to entirely online, virtual instruction. Recent systematic reviews and meta-analyses have demonstrated the viability of e-learning in medical education [19]. For example, Pei and Wu found that online education has advantages in increasing students’ knowledge and skills [20]. Adoption of e-learning modalities, particularly blended learning modalities, can help alleviate challenges of access, time, and cost while promoting active pedagogies required to develop higher-level thinking and skill development [21–29].

Blended learning is an e-learning modality that “blends” learning experiences (such as asynchronous online, synchronous online, and synchronous face-to-face experiences) to achieve pedagogical goals [27, 30]. A blended curriculum

leverages various delivery methods and modalities to achieve curricular outcomes, including asynchronous and synchronous online and face-to-face activities [31]. Blended models have yielded a higher level of learning and knowledge application in health professions education [27, 32, 33] because they allow faculty to combine methods and modalities to meet student needs, learning goals, and overcome challenges to engaging in the learning process, such as access, time, and space. They are also beneficial for catering to different learning processes [34, 35] and for demonstrating topics when real-life experiences are not available, such as when access to a pediatric patient might not be possible now for a future care provider [36].

A blending of learning activities and delivery models has already proven effective in the education of palliative care providers. A 2018 study sought to increase access to pediatric hospice care through a two-day intensive educational program to provide the skills and confidence necessary for providers with experience in adult hospice/palliative care to apply their knowledge in this novel setting [16]. The two-day intensive program blended varying teaching methods and learning modalities during synchronous, in-person sessions and was followed by consistent evaluations, to assess learning prior to the study, directly after the program completion, and approximately six months following the program. The program demonstrated effectiveness regarding levels of learning (increase in knowledge in almost all modules) and increased self-confidence (80% of providers felt better prepared to take on pediatric patients in the future (one-sided ANOVA, $p < 0.05$)). However, despite the promising and significant findings, participation necessitated large blocks of physical presence during the two-day period to complete the program. Future programs may be able to mitigate this requirement through the delivery of a similar curriculum in a fully online, asynchronous, self-paced delivery model which leverages the success of blended learning activities by incorporating e-learning. As previously noted in Pei and Wu’s systematic review and meta-analysis, online learning modalities can enhance knowledge and skills in ways not present in face-to-face learning [20].

Delivery modality is critical to promoting provider access to education. A recent study, conducted by the national Pediatric Palliative Improvement Network (PPIN), adopted a fully online format for education related to the standardization of guidelines for continuing education of healthcare providers interested in pediatric palliative care and improving patient outcomes following pain assessment through quality improvement (QI) [37]. Due to the COVID-19 pandemic, all 2020 conferences were transitioned to a virtual format. The online design facilitated engagement and collaboration among providers, which was necessary for the practical completion of multicenter QI projects. Content in the curriculum previously delivered face-to-face was enhanced by a blend of online modules and subsequent monthly discussion-based calls (which were in place prior to COVID-19 and continue today).

Similarly, we selected a blended delivery modality for our curriculum to promote increased access and invite practicing clinicians to develop competence and confidence in

caring for the pediatric hospice/palliative care patient. The self-paced, fully online asynchronous modules of the curriculum are blended with follow-on virtual mentoring. In creating our “blend,” we chose to deliver the majority of the didactic content through asynchronous, online modules that could be completed at the clinician’s own pace, time, and place of choice. Then, once clinicians complete the online modules, they participate in virtual synchronous precepted sessions in which they can integrate the knowledge gained from the modules with their own prior experience to propose care for a pediatric patient. Having designed our delivery model, we turned to select theoretical frameworks to guide the design of online modules, virtual precepting experiences, and the relationship among them.

3. Guiding Frameworks

3.1. Community of Practice. Since the overall goal of this educational initiative is to broaden the community of providers who are proficient in caring for pediatric hospice/palliative patients, we selected the community of practice (CoP) framework as one of our guiding frameworks. Lave and Wenger first introduced the theory related to CoP in 1991, a social learning theory based upon situated learning and guided by constructivism. CoP proposes that learning occurs through social interaction within a community [14]. Learning is not an individual activity; instead, it happens through social interaction as less knowledgeable or less experienced members on the periphery of a community gain knowledge and skills by interacting with experts within the community [14]. The learning is “situated” within the community in that knowledge and experience gained relate directly to the context in which it will be applied in the future. Proposing CoP as an appropriate guiding framework for medical education, Cruess et al. [38] noted the first application of the theory in medicine in Parboosingh’s work on physician communities of practice [39]. Since then, the CoP framework has been applied broadly in medical and health professions education, both to guide formal didactic education and continuing medical education [16, 37, 40, 41]. Implementing collaborative care has been of extreme benefit during the COVID-19 pandemic for academic hospitals and long-term care facilities [42] that experienced a need to efficiently educate providers due to an abrupt increase in patient volume and complexity of care.

The following three essential elements contribute to CoPs: domain, community, and practice [43, 44]. Domain refers to the area of interest shared by community members that necessitates specialized knowledge or skills. Community refers to the common identity, shared values, and goals embraced by the members. Practice relates to the “repertoire of specialized actions and interactions cultivated by the community” [45] (p. 322). Our domain comprises the requisite specialized knowledge to care for PHPC patients. To build our community of PHPC experts, providers experienced in adult hospice care will first participate in asynchronous online modules conveying knowledge requisite to care for the pediatric patient. Then, they will be mentored by virtual preceptors with expertise in PHPC

during successive virtual sessions to further develop their knowledge, confidence, and skill in caring for pediatric patients.

Furthermore, after completing the program, participants will be encouraged to develop local and regional CoPs to promote PHPC, promoting the sustainability of this rich, multileveled model that is more commonplace in pediatric hospice than in the adult hospice arena. Unlike the adult hospice model, where the patient commonly discontinues their relationship with previous clinicians, the pediatric model usually includes a referring pediatric doctor/team who usually wants to stay involved and participate in decision-making through the trajectory of the child’s condition. Given that the usual adult hospice model allows the nurse more autonomy with standardized orders and practice, the nurse may be unfamiliar with the continued collaboration with the referring teams. Therefore, our curriculum prepares them with resources to establish and maintain local and regional CoPs in PHPC.

3.2. Bloom’s Taxonomy. Having aligned our educational goals with the CoP framework, we then had to consider structuring the relationship between the online modules and the virtual precepting experiences. Bloom’s taxonomy [46], as presented by Anderson et al., categorizes into six levels of cognition: remember, understand, apply, analyze, evaluate, and create, and it served as the guiding framework for this task. The taxonomy allowed us to identify the level of cognition we hoped to achieve through participation in the online modules and, subsequently, the virtual precepting sessions. The primary goal of the online modules is to increase knowledge and begin to build confidence in potentially caring for the pediatric hospice/palliative patient, so, correspondingly, the learning objectives for the online modules were designed to align with the lower cognitive levels: remember, understand, and apply. We then developed appropriate learning objectives for each online module to guide the design of content and knowledge checks (quizzes) to assess the level of learning achieved as clinicians progressed through the asynchronous portion of the curriculum. Virtual precepting sessions are intended to allow for the application of the knowledge gained through analysis of the patient’s needs, evaluation of the efficacy of the current treatment, and creation of a new treatment plan, so learning objectives for these sessions were designed to promote higher education levels of cognition including analyze, evaluate, and create. The sessions will be case-based, presenting participants with increasingly challenging cases of standardized patients for which they must create treatment plans. The virtual preceptors will assess the plans using assessment tools aligned to specific requisite competencies and levels of learning. During the virtual precepting sessions, the preceptor can discern the degree to which the provider is appropriately integrating or applying knowledge gained from the online modules to analyze the case, evaluate the needs of the patient, and create care plans that align with the needs of the pediatric patient and their family. The virtual sessions will also allow for debriefing with the virtual

preceptor related to feedback on the care plan and opportunities for improvement. These sessions will be critical to imparting the tacit and explicit knowledge required to develop expertise in caring for PHPC patients.

3.3. Resulting Conceptual Framework. Figure 1 presents the resulting conceptual framework combining the CoP and Bloom's frameworks and the blended course design that will guide the selection of content, activities, and assessments for our educational intervention.

As noted, this framework guided the creation of ten online, self-directed modules that introduce providers experienced in adult hospice care to the knowledge and skills required to care for the pediatric patient. Completion of the modules will promote understanding, remembrance, and application of this knowledge and skills. Self-check quizzes embedded within each module can be taken multiple times to increase the individual participants' self-confidence in the knowledge of the content and future application. Our team also created pretest and posttest items to assess change in knowledge and skill. Confidence will be measured by a self-report Likert scale instrument developed and previously reported by Lafond et al. [47] that has been modified to align with our curriculum.

After completing the online, self-directed modules, participants will engage in a series of virtual precepting sessions with knowledgeable experts in PHPC to create care plans for standardized cases of PHPC patients. As previously noted, the cases will increase in difficulty. Debriefs of the care plans with the virtual preceptors will increase the knowledge and confidence novices have in joining the PHPC providers community. During these sessions, participants will also discuss with the experts on how to build their own local communities of practice related to PHPC for continued support and guidance as they develop additional expertise.

4. Curriculum Design

After deciding upon a guiding conceptual framework and delivery structure, we turned to develop the requisite competencies to guide the selection of content and activities for the online modules and cases in the virtual precepting sessions. First, we reviewed the literature and considered a needs assessment conducted by Kaye et al. [10]. The authors surveyed regional hospices in the western Tennessee area and found that over 64% were interested in receiving education for caring for pediatric patients. Yet, existing evidence to guide the content needed was sparse. Correspondingly, module topics were developed based on standard palliative care educational curricula, including the ELNEC curriculum. After streamlining content by removing redundant existing adult palliative care topics, we drafted our proposed topic list. Anecdotal evidence was gleaned from ongoing discussions with regional hospice nurses and feedback from course evaluations for a standardized 2-day pediatric palliative curriculum over more than ten years. We introduced ten topics through a needs assessment to confirm that the subject matter chosen was of interest and needed (as reflected in our module titles noted in Figure 1). A total of 55

palliative care providers, in two separate conferences, completed the needs assessment. Of note, no additional subjects were proposed by either group of hospice staff for our intended audience. Levels of confidence were measured by using a simple Likert scale. Face validity was established through expert review. Level of competence for each proposed topic was measured using a Likert modeled on Benner's Novice to Expert [48].

Our literature review, curriculum review, and needs assessment informed our working list of topics for the ten online modules. To develop a list of competencies guiding online module development, we created a curriculum map. The curriculum map allowed us to cross-list and compare competencies from the following two sources: the Association of Colleges of Nursing (AACN) competencies and Recommendations for Educating Undergraduate Nursing Students (CARES) preparing nurses for caring for the seriously ill and their families [49, 50] and the National Hospice and Palliative Care Organization (NHPCO)'s standards of practice for pediatric palliative care [9]. The resulting cross-list of competencies was compared with results from the needs assessments to ensure alignment of competencies and identify gaps related to requisite skill and knowledge. Competencies were then developed aligned to identified gaps, resulting in a finalized, integrated list of requisite competencies.

After creating the finalized list of requisite competencies, we created learning objectives for each online module and virtual precepting session to align with the competencies. We determined the appropriate sequencing of modules to scaffold knowledge across the curriculum for competence attainment and increase self-confidence in the content application.

The identified learning objectives for each module guided content and activity creation and the creation of the self-check quizzes that would be embedded in each module. Within the modules, new content that is basic information regarding the care of the pediatric patient is provided first. Differences and similarities between adult and pediatric patients are highlighted throughout the modules. Since the intended audience is the experienced adult hospice nurse, overlapping hospice and palliative care principles are deemed redundant and not emphasized. Prior to the development of the online modules, prospective content was reviewed by several PHPC experts. Following this review, we used the competencies and learning objectives to develop cases and assessment tools for the virtual precepting sessions. Figure 2 comprises the steps in our curriculum design process.

Once the sequencing and content were developed, we then moved on to the creation of the online modules as detailed below.

5. Online Module Creation

Development of the online modules required a team of professionals and specific technical resources. Our design team comprised the first author (an expert in blended curriculum design), a senior author (an expert in PHPC), additional instructional designers, a media and design expert, and a student worker.

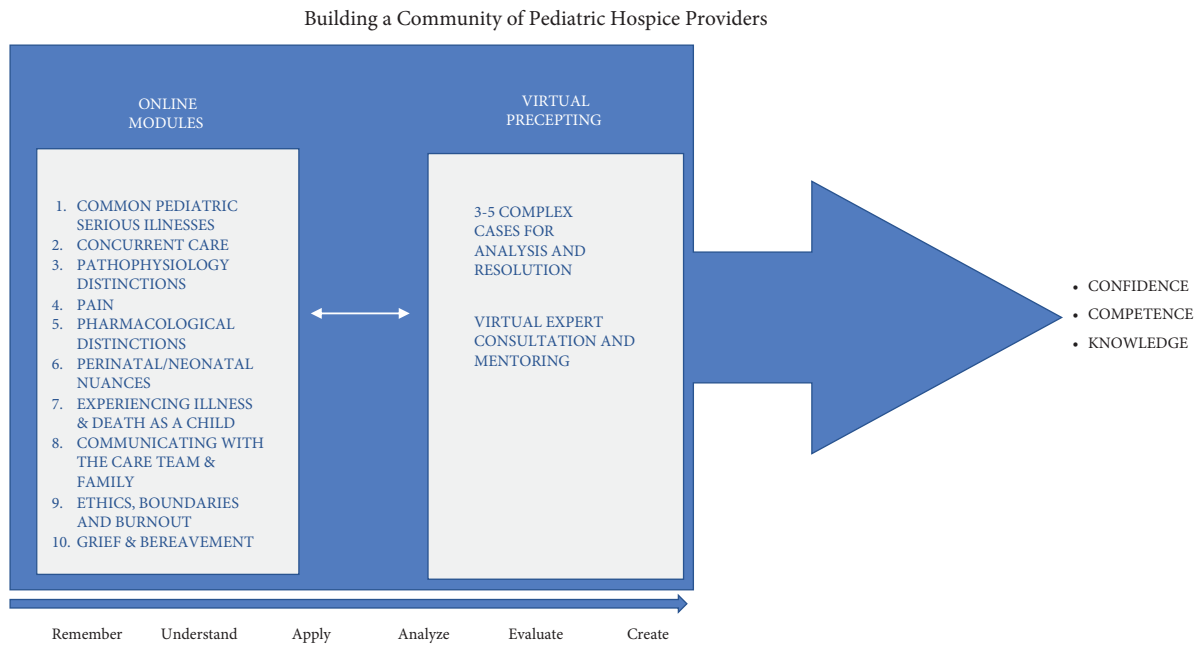


FIGURE 1: Conceptual framework for a blended curriculum.

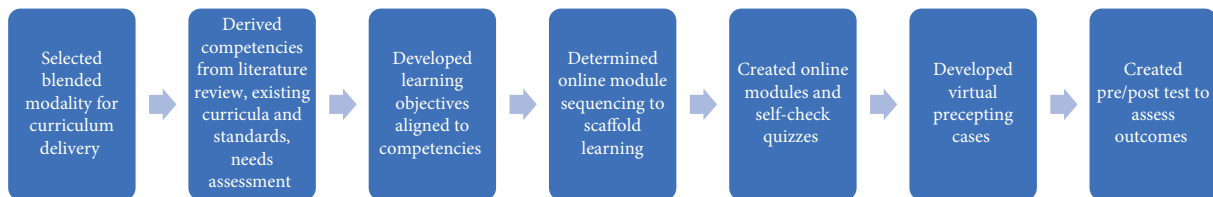


FIGURE 2: Curriculum design sequence.

After completing storyboards in Google Slides with content related to lectures and activities, the senior author recorded the audio narration remotely by using Zencast, and the modules were then developed by a team of instructional designers using Articulate Storyline 360. After review and edits, the modules were published as SCORM packages and uploaded to a learning management system (LMS) for the university hosting the pilot. The LMS is EthosCE, a “leading learning management system for medical associations, academic medical centers, health systems, and medical education companies.”

There are ten self-paced online modules. Each module consists of an approximately 30-minute lecture in which the senior author’s lecture is accompanied with visuals timed to illustrate the points being made. Each module includes multiple choice knowledge checks at the end of the module, which provide immediate feedback to learners on whether their responses were correct or incorrect and explain why or why not. Some of the modules include interactive sections within the lecture. For example, module 5 includes exercises allowing learners to practice calculating opioid dosages according to pediatric patients’ body weights.

To complete the course, learners must meet the enrollment criteria, complete a pretest, view all 10 modules, respond to all knowledge checks within, and complete a posttest.

6. Next Steps and Implications

Now, we will conduct a quasiexperimental pilot study to assess the feasibility of the blended curriculum model. Initial piloting will be with 50 nurses who have experience in adult palliative care, but subsequent iterations will be available to all providers of hospice/palliative care. Instructors for the virtual precepting sessions will comprise nurses who are experts in PHPC. Three virtual precepting sessions will occur on a one-on-one basis between the preceptor and participants. Virtual sessions will comprise the analysis of three progressively complex cases. The first and senior authors will evaluate the initial results of the curriculum’s impact on knowledge, confidence, and competence. Based on pilot testing, analysis, and revision results, we will relaunch the revised curriculum on a larger scale.

Ideally, scaling the blended curriculum will introduce a broader range of pediatric cases that include varying presentations of similar pathologies to enhance confidence further and promote competence [51]. With far-reaching enrollment through a broader regional and national dissemination, an immediate impact on confidence, competence, and knowledge will lead to increased access to hospice for children through confidence in caring for pediatric patients.

The potential benefits of employing this program to enhance access to pediatric hospice care cannot be understated. Adult hospices seeking to expand their market share to include pediatrics will benefit. Additional anticipated benefits include indirect financial impact through cost avoidance. By enabling more time at home through support for end-of-life care, optimized quality of life for the pediatric patient and family can be accomplished. Roughly \$100 billion is spent annually on managing children with medical complexity [51–53]. Facilitating interprofessional collaboration between hospice, palliative care, and critical care providers during the management of complex pediatric patients will enhance informed medical decision-making and potentially decrease often expensive, inappropriate interventions at the end of life.

The blended learning model addresses the needs of the adult hospice provider with palliative care experience but minimal to no pediatric experience. This program builds upon the basics of caring for the pediatric patient to provide an intensive, blended curriculum that emphasizes the differences and similarities between adult and pediatric palliative care. Furthermore, the blended curriculum design fosters the transfer of learned knowledge into actual practice with mentorship by experienced PHPC providers [54–56].

Multiple articles have demonstrated the positive impact of blended curriculums on student outcomes including confidence, knowledge, and competence [33, 57–59]. In addition, studies indicate increased student satisfaction and learning outcomes in online and blended learning courses [60–62]. The traditional definition provides online education with face-to-face instruction. In the hospice setting, face-to-face instruction would be time-intensive and cost-prohibitive for the instructor and student alike. A more time-efficient and cost-efficient model would replace the face-to-face encounter with the teleprecepting option. The far-reaching impact on the rural areas of states makes this option ideal for providing support and assistance with the transfer of knowledge to the clinical arena.

Data Availability

No data were used to support the findings of this study.

Ethical Approval

This article presents curriculum design and theoretical/conceptual frameworks. Research was not conducted to prepare this article. Thus, review by an ethics committee/IRB was not required.

Conflicts of Interest

The authors declare that they have no conflicts of interest in this article.

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