

Background

PCCM fellows are faced with many educational demands within a busy clinical learning environment. Educators must create innovative and efficient education programs. CRRT is commonly used by PCCM physicians. It is critical PCCM fellows understand the principles of CRRT. We aim to create an effective program for accelerated competency development to optimize care for critically ill children receiving CRRT.

Program Design and Methods

Educational Design Research (EDR) was used to guide the development of an evidence-based, theory-informed program. The strengths of EDR lie in its pragmatic and participatory approach to investigating the problem(s) and creating solutions through iterative design within an authentic educational environment.

To analyze the educational problem, we performed a needs assessment of trainees and faculty members, reviewed required content and scanned existing educational programs. On a Likert scale of 1-5, respondents (n=71) reported their confidence in the basics of CRRT, anticoagulation, monitoring and complications as low (mean 2.75, SD 0.14), their motivation was high (mean 4.3, SD 0.11) for learning about each of these objectives and 11% (8/31) received formal CRRT training.

A two-part workshop was created using the blended learning framework. Each workshop is novel with multimodal approach and sequential and synergistic integration of Team Based Learning (TBL) (synchronous) and online gamification (asynchronous) components. TBL shifts the focus from knowledge acquisition in the classroom setting to using class time applying concepts obtained through pre-course work (e.g. reading material) for higher-order thinking. Our design principle is an adaptation of TBL using meaningful gamification in the form of “choose your own adventure (CYOA)” branching scenarios as pre-course work.

Figure 1 depicts the components of each workshop. Participants complete pre-course work containing clinical scenarios created in the commercially available “Survey Monkey” platform in a CYOA format. As the learner progresses through the case, their answers are recorded and provide analytics to course directors. Following the pre-course work, the participants attend a three-hour workshop. During the workshop, there is small group work with reaction and feedback of the participant’s thinking of key concepts introduced during the pre-course work with additional activities of hands on activities and short simulations of common clinical scenarios. The two workshops are sequential. Part two builds on key concepts from part one with more advanced simulations.

Results

To evaluate the program, we used Kirkpatrick’s new world four-level evaluation model

shown in Figure 2. Kirkpatrick describes four levels used to evaluate the effectiveness of a program: 1) reaction, 2) learning, 3) behavior and 4) results. We evaluated level one with a survey about the relevance and engagement of the workshop. Level two evaluations included analytics from CYOA to evaluate the skills and knowledge and surveys for the attitude and commitment to learning. We will use these evaluative findings to inform program improvement for level three and four outcomes in the future.

Participants include eighteen PCCM fellows. The workshop was evaluated using a Likert Scale 1-5. Results are shown in figure 2. Overall, the participants found the program to be fun, engaging and relevant to their current practice (mean 4.89, SD 0.31). The CYOA format was enjoyable and preferred over the traditional reading method (mean 4.9, SD 0.30). Participants felt well prepared for the workshop (mean 4.63, SD 0.66). The TBL format of the workshop and group activities/simulations were effective ways to learn (mean 4.88, SD 0.32) and met personal expectations (mean 4.96, SD 0.20).

Following completion of the first two-part workshop, the program will be expanded on a multi-institutional level for combined, remote TBL sessions for PCCM fellows. Additionally, we will continue program evaluation to ultimately improve the care of pediatric patients receiving CRRT therapy.