ATS Highlights 2020:
Critical Care Assembly Early Career Professionals

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Tell us about yourself.
I am an ICU Nurse by background and currently working as a Nurse-Scientist and Assistant Professor in Omaha, NE. I am a first-time mom, and lucky to have the world's most supportive spouse. I'm a wannabe CrossFitter, proud rescue dog mom, and lover of all things outdoors.

Is your research clinical, basic science, or translational?
Clinical

Tell us about your research.
I design and test technologically-driven integrative health interventions that reduce symptom burden and promote patient and informal caregiver involvement in the provision of care at the bedside in the intensive care unit.

Where do you see yourself in 5 years?
I envision building my team, expanding my research, and promoting a culture that successfully operationalizes the academic/clinical partnership in Nursing research.

How has the Critical Care Assembly contributed to your career?
The Critical Care Assembly has offered rich opportunities for networking and also allowed me a deeper understanding of the transdisciplinary value of my ATS membership.

Published manuscripts in ATS journals.
Co-author for Nursing Research Priorities in Critical Care, Pulmonary, and Sleep: International Delphi Survey of Nurses, Patients, and Caregivers: An Official American Thoracic Society Workshop Report. (2020), *Annals of the ATS,* 17(1), 1-10.

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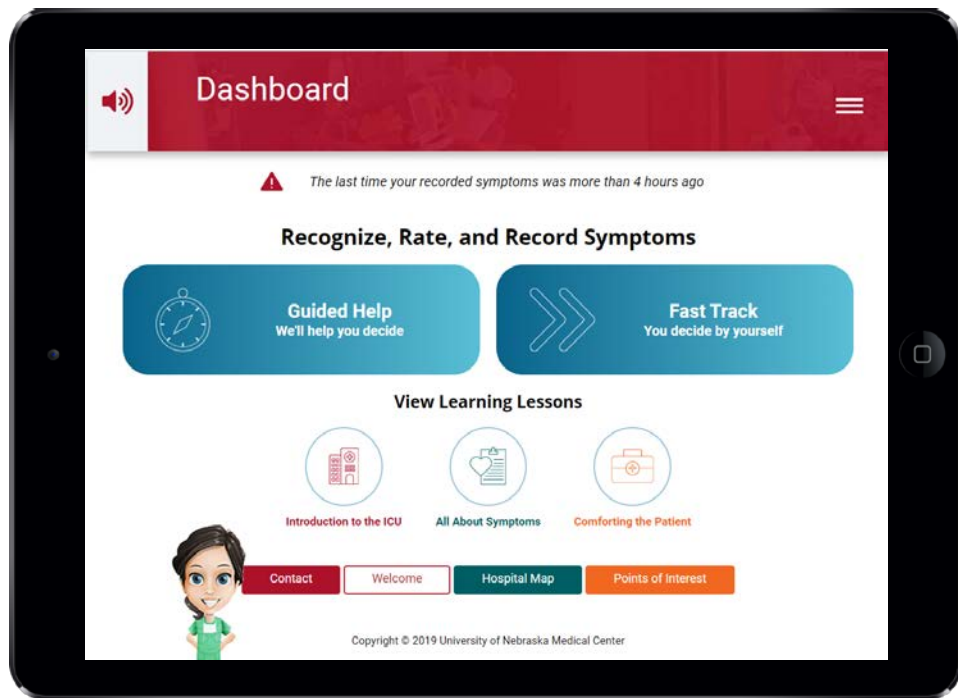
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Development of a Mobile Application to Promote Family Caregiver Engagement in Symptom Assessment and Management during Mechanical Ventilation in the Intensive Care Unit (ICU)

Rationale: Critical care guidelines call for the liberal inclusion of family caregivers into bedside care, but few evidence-based strategies exist that engage them as active participants in the provision of care in the ICU. The purpose of this study was to obtain user feedback of a newly developed mobile application, ICU-CARE that enables ICU family caregivers to assess patient symptoms and actively intervene with non-pharmacologic comfort measures.

Methods: Qualitative and quantitative methods were used to explore user perceptions of ICU-CARE. A convenience sample of current ICU nurses and previous ICU family caregivers were recruited to participate in two 90-minute focus groups. Participants were asked to explore ICU-CARE and complete a checklist of tasks within the application. Then, they answered the measure of Education Material Acceptability (EMA), a 10-item instrument that evaluates clarity, accuracy, content, reading level, and technical quality. Item responses range from 1 (strongly disagree) to 5 (strongly agree). Thematic analysis was used to code transcripts and identify the overarching themes, specifically focusing on likes, dislikes, and ways the application could be improved. Descriptive statistics were used to analyze responses to the EMA.

Results: 3 caregivers and 5 nurses participated. Study findings suggest the application was well-received by participants and acceptable for future use by ICU patient caregivers. The results of the EMA showed overall acceptance by both caregivers and nurses, with a mean score of 44 (SD=9.7). In their qualitative responses, participants highlighted the ease in utility of the mobile resource, the expanse of information important to caregivers, and the appeal of the pictures, sounds, and descriptions throughout the mobile application.

Conclusions: This study provided valuable insight into the perspectives of ICU nurses and previous ICU family caregivers on a mobile application that promotes family caregiver engagement in ICU. The findings suggest a number of components of ICU-CARE are valuable and suggestions were offered to optimize the technology. ICU-CARE is being further evaluated as part of an ongoing randomized clinical trial.

Recruitment for our follow-up randomized clinical trial testing the feasibility and acceptability of ICU-CARE is currently ongoing.

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Variable	M (SD)	Std. Error Mean	t	df	Sig (2-tailed)
Heart Rate	-1.3 (14.1)	4.47	-0.29	9	.78
Systolic Blood Pressure	0.9 (4.7)	1.50	0.60	9	.56
Diastolic Blood Pressure	-2.1 (5.3)	1.75	-1.21	8	.26
Respiratory Rate	-5.3 (17.1)	5.43	-0.98	9	.36
Oxygen Saturation	-0.3 (1.8)	0.58	-0.52	9	.62
Anxiety	-0.2 (2.1)	0.74	-0.25	7	.81
Pain	-0.5 (1.8)	0.63	-0.80	7	.45

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Animal Assisted Interactions with an Animal Robot During Physical and Occupational Therapy Sessions in the Pediatric ICU: A Feasibility Study

Rationale: Animal assisted interactions (AAI) increase patient engagement, decrease stress, and improve physiologic variables. AAI with live animals is difficult to do safely with patients in the pediatric intensive care unit (PICU) due to their immunocompromised status and the logistical complexities of the ICU environment. AAI with robot animals may be an equally beneficial, alternative option. The purpose of this study is to determine the feasibility, acceptability and therapeutic effect of a robot animal, PARO, during physical and occupational therapy sessions in the PICU.

Methods: This single-arm, pretest-posttest exploratory study uses PARO, a therapeutic interactive robotic seal, to facilitate rehabilitation in the ICU. The therapist is responsible for directing each session with PARO and targets the following skills: speech, memory, fine motor skills, balance and endurance, self-esteem, and sensory stimulation. 30 PICU patients from a single academic medical center are currently being recruited to participate. Pain, anxiety, and physiological variables are collected immediately before and after each session. A standardized activity performance evaluation is completed in collaboration with the therapist after each session. Semi-structured follow up interviews are conducted with the patient once the subject completes the protocol.

Results: To date, 11 subjects ages five to 17 have completed the study protocol for a total of 30 individual sessions. The mean number of sessions per subject is 2.7 (SD=1.3), lasting 36 minutes on average (SD=8.6). No statistically significant changes to psychophysiological variables have been noted. Subjective feedback has been positive and includes statements like, "It was different than normal" and "It made me feel calm."

Conclusions: Preliminary results indicate that PARO is feasible and acceptable to use in the PICU and AAI using robot animals can elicit similar positive effects as AAI with live animals. This novel intervention has great potential to positively impact psychophysiological outcomes of critically ill patients and transform ICU rehabilitation practices.

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