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Implementation of a Critical Care Point-Of-Care Ultrasound Curriculum for Pediatric Residents at Hasbro Children's Hospital

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Abstract

- Point-of-care ultrasound (POCUS) is an essential tool in the critical care setting.
- It is used to make rapid assessments and direct critical interventions.
- POCUS relies on bedside providers' training, knowledge, and comfort.
- Physicians-in-training should receive education and hands-on practice on when and how to obtain and interpret POCUS images.
- Over the academic year 2021-2022, we implemented a preliminarily validated POCUS curriculum for all residents who rotate through the Hasbro Pediatric Intensive Care Unit (PICU).

Introduction

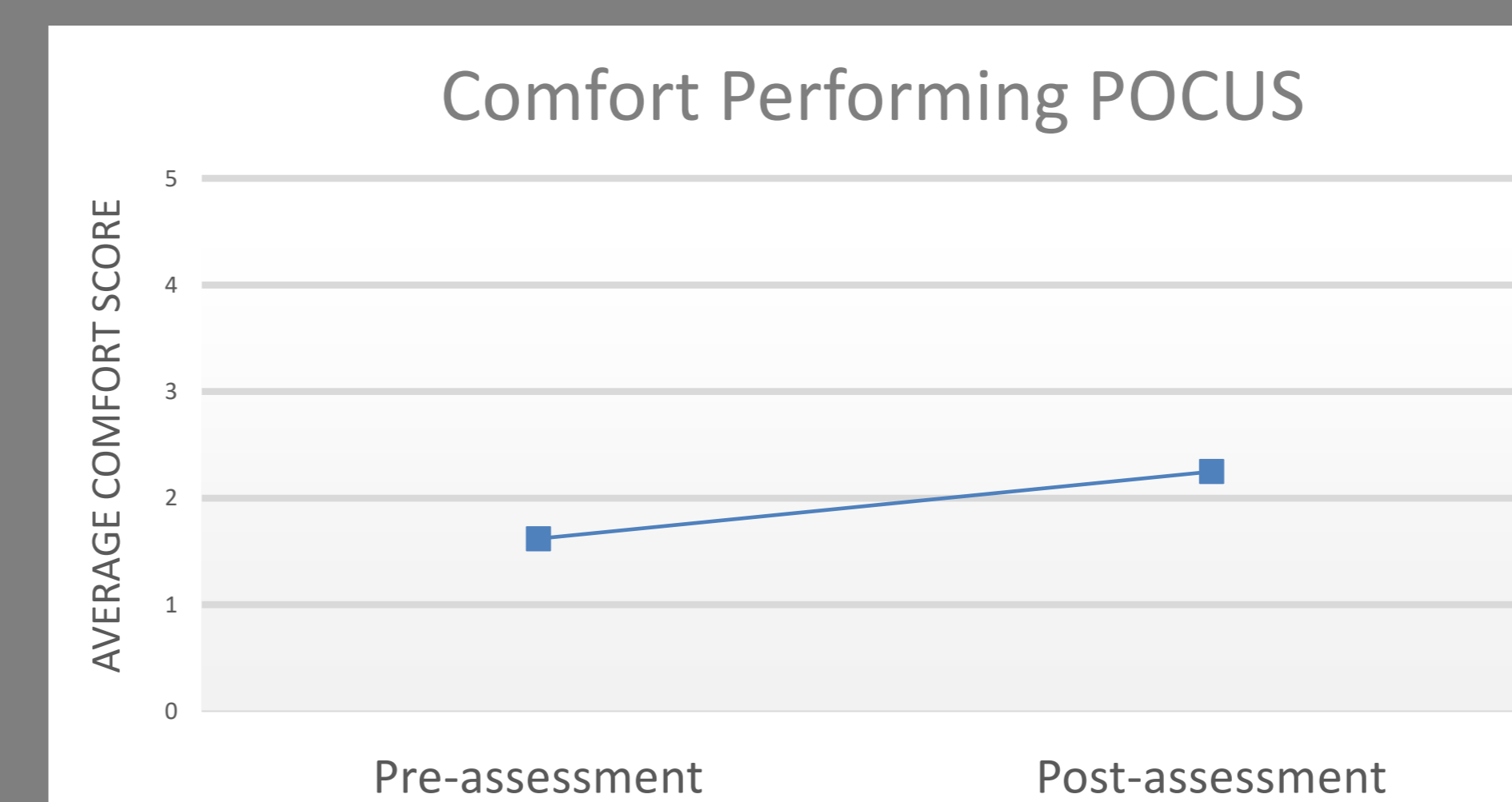
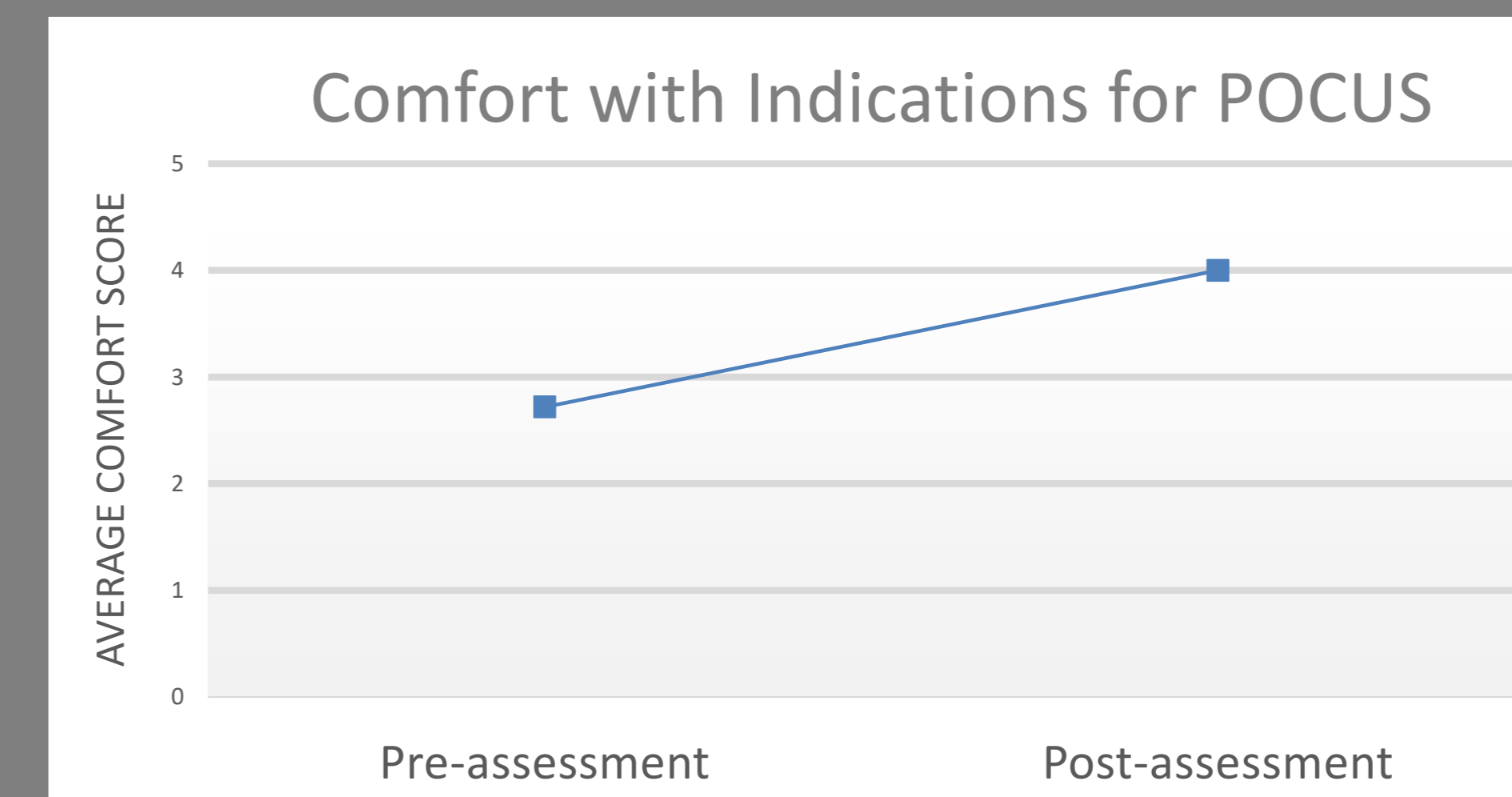
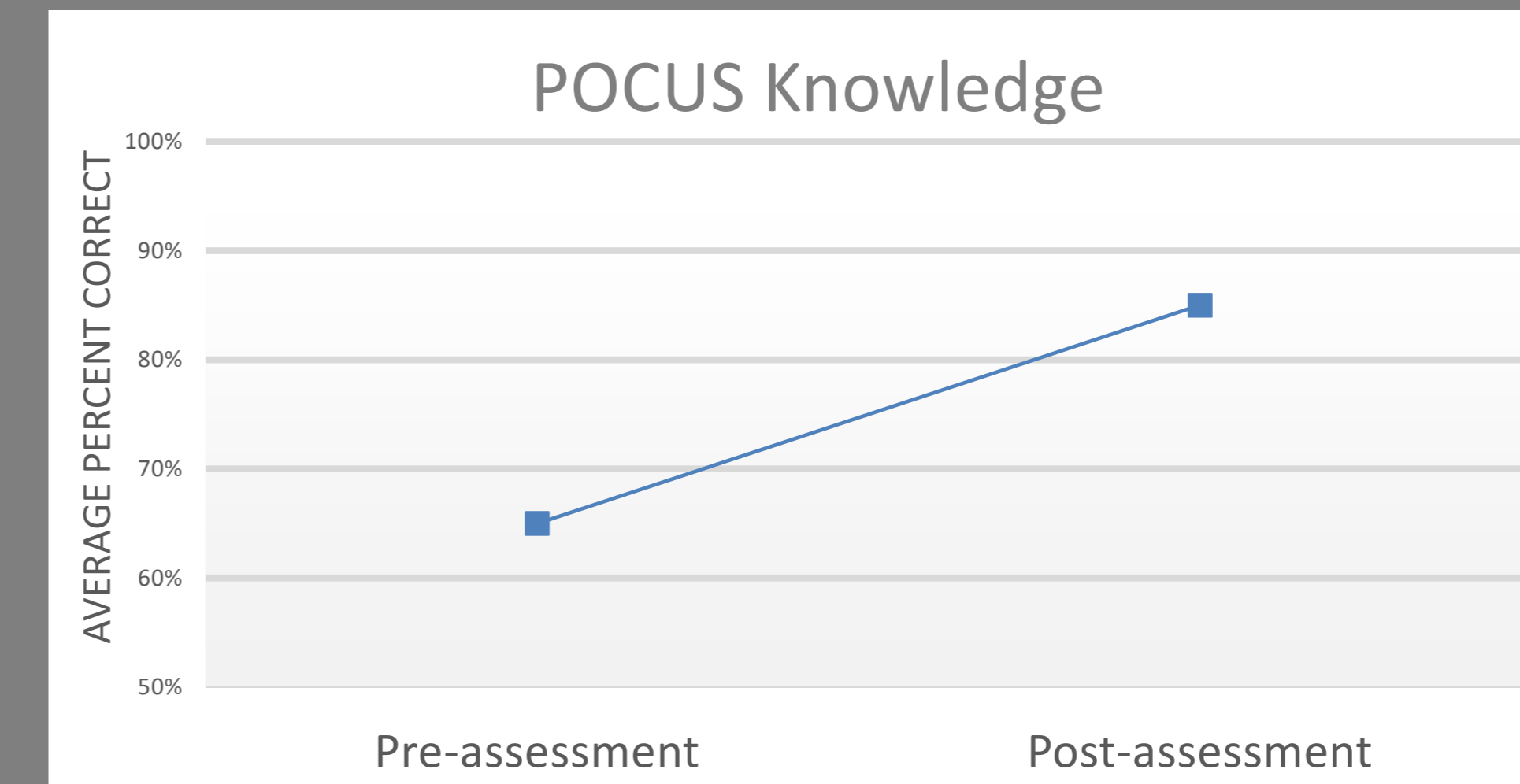
- In 2018, a standardized ultrasound curriculum for the pediatric intensive care unit (PICU) was proposed and preliminarily validated in a small proof-of-concept study (Good, 2018).
- The curriculum increased knowledge and comfort using POCUS in six pediatric residents with no prior POCUS experience.
- We now implement this curriculum monthly for all residents rotating through the Hasbro PICU to establish a standardized POCUS curriculum for all pediatric residents.
- We aim to validate the generalizability of this curriculum in a larger cohort of residents.

Methodology

- Every month, residents rotating through the Hasbro PICU complete a pre-course knowledge assessment to assess baseline exposure, knowledge, and comfort with POCUS.
- They are then instructed to independently review three instructional PowerPoints covering:
 - 1) ultrasound basis,
 - 2) cardiac ultrasound, and
 - 3) lung ultrasound.
- Each group then receives a 30-minute didactic session reviewing the materials, followed by one hour of hands-on practice performing POCUS on a PICU patient or colleague.
- After the course, residents are asked to complete a post-course knowledge assessment.



Assessments



Results

In our preliminary data:

- Mean score on knowledge-based questions increased from a mean of 65% correct responses (n=11) to 85% (n=4) from pre- to post-assessment.
- Learner confidence on a Likert scale increased in both understanding the use of POCUS (mean 2.72 to 4.0) as well as how to perform POCUS correctly (mean 1.62 to 2.25)
- Within-subjects analysis is limited due to sample size at this time

Conclusion

Preliminary data suggests that implementation of a combined didactic and hands-on POCUS curriculum in the Hasbro PICU increases resident knowledge and confidence using POCUS in the critical care setting.

Acknowledgements

Methodology and materials available at:

- Good, Ryan, Jonathan Orsborn, and Timothy Stidham. "Point-of-care ultrasound education for pediatric residents in the pediatric intensive care unit." *MedEdPORTAL* 14 (2018).