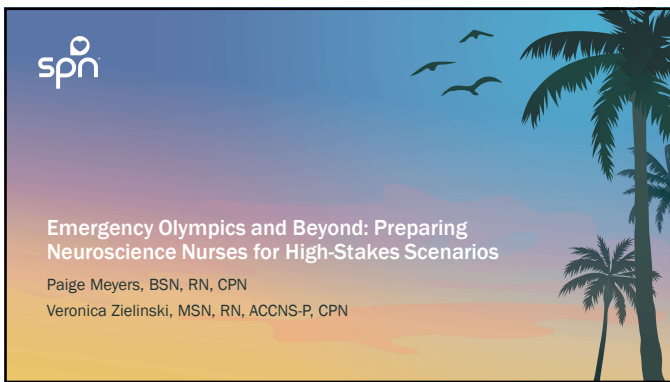




1



2



3

Disclosures



No conflicts of interest to disclose.



4

The Children's Hospital of Philadelphia



Academic Medical Center
5 Magnet Designations
3 Hospitals
724 Beds (And Growing)

Neuroscience Unit
24 Bed unit
40 Registered Nurses



Figure 1. Children's Hospital of Philadelphia. From: <https://www.chop.edu/locations>



5

Assessment



FY 25 Needs Assessment


Priority Learning Needs:

- Cardiac Arrest
- Supporting a Code
- Anaphylaxis
- Respiratory Failure




6

Characteristics of Pediatric In-Hospital Cardiac Arrest



Incidence:	Hospital Location:	Cause of arrest:	Survival to discharge:	Neurological outcome:
Approximately 15,200 per year in the United States	85%-90% in monitored settings	Respiratory failure and/or progressive shock	45%-50%	Favorable in 80%-90% of survivors




Morgan et al., 2021; Holmberg et al., 2019

7

Resuscitation Skill




Resuscitation skill declines with time	Infrequent use accelerates skill decay	Frequent practice improves skill retention	Efficient response improves outcomes




Bennett et al., 2021; Olson et al., 2024; Karasorees et al., 2020; Wise et al., 2020

8

Diagnosis





	Identified opportunities to enhance RN pediatric emergency skills	
	Recognized importance of engaging learning approach	




9


Planning and Design




Reviewed current evidence and best practices to inform simulation-based training




Engaged key stakeholders to align goals and protect staff time



Designed program structure and format




Identified required resources



10

Planning and Design




Gamified Learning Strategies

- Enhance engagement,
- Support self-efficacy,
- Strengthen team communication
- Promote transfer of skills to clinical practice

Simulation



- Improved technical skills
- Clinical competence
- Crisis management
- Teamwork and collaboration
- Improved patient outcomes

Chinnai et al., 2022; Nyam-Ekennai et al., 2025; Wiscet et al., 2020; Bennett et al., 2021; Warren et al., 2025; Karageorgos et al., 2020; Morgan et al., 2021




11


Planning and Design




Part 1:
Emergency Olympics




Part 2:
Simulations




12


Implementation 




TIMED SKILL-BASED CHALLENGES




POINT SYSTEM AND FRIENDLY COMPETITION








HIGH-FIDELITY SIMULATIONS




13

Emergency Olympics: A Focus on Skills 


 Resuscitation Record Documentation	Simulated code script with accuracy-based scoring
 Code Cart Scavenger Hunt	Interactive scenario to locate essential code equipment
 Push-Pull Relay	Timed setup of push-pull system and resuscitation bolus practice
 Medication Drawer Scavenger Hunt	Solve clues under time pressure to find correct medications




14


Simulations 

Respiratory Failure	Apneic Seizure	Anaphylaxis
<ul style="list-style-type: none"> Progression from High Flow Nasal Cannula support to acute respiratory decompensation requiring bag-mask ventilation 	<ul style="list-style-type: none"> Responding to an apneic seizure, initiating a code response, and performing bag mask ventilation 	<ul style="list-style-type: none"> IVIG reaction, administering IM EPI and calling a code




15


Evaluation 




57% Reduction in emergency transfers and codes outside of the ICU




Increase in **self-reported** proficiency




16

Evaluation 


Self-reported proficiency	Mean Pre	Mean Post	Mean Change	p
Activating a Code	2.44	2.89	+0.45	.021
Preparing Emergency Medications During a Code	1.94	2.78	+0.84	.166
Documenting the Events in a Code	1.94	2.17	+0.23	.157
Locating Supplies in and on the Code Cart	2.17	2.78	+0.61	.035
Initiating Code Response Interventions on Unit Before the Code Team Arrives	2.17	2.78	+0.61	.026
Prioritizing Initial Interventions in an Emergency Scenario	2.11	2.67	+0.56	.039



17



Considerations for Applicability 

- Prior skills and experience
- Scheduling and logistics
 - Group size and room limitations
 - Protected time
- Access to simulation center
- Organizational support and culture
- Relevance to patient population



18



Conclusion



- Gamification and simulation are effective and engaging strategies to improve emergency response proficiency
- Model is replicable and scalable
- Encourage ongoing simulation-based refreshers
- Proficiency in an emergency isn't optional, it's life-saving

19




Acknowledgements



We thank our partners at the **CHOP Center for Simulation, Advanced Education, and Innovation**, our **operational leaders** for supporting dedicated time, and **our nursing staff** for their engagement and commitment to advancing pediatric emergency readiness.

20

Questions



21

References



Bennett, J., Kuszajewski, M., Dangerfield, C., & Morgan, B. (2021). Optimizing Nursing Response to Crisis Events through In-Situ Simulation. *MEDSURG Nursing*, 30(2), 106. <https://doi.org/10.62116/MSJ.2021.30.2.108>

Cohen, T. N., Anger, J. T., Kanji, F. F., Zamudio, J., DeForest, E., Lusk, C., Avenido, R., Yoshizawa, C., Bartkovic, S., Nemeth, L. S., & Catchpole, K. (2022). A Novel Approach for Engagement in Team Training in High-Technology Surgery: The Robotic-Assisted Surgery Olympics. *Journal of Patient Safety*, 18(6), 570–577. <https://doi.org/10.1097/PTS.0000000000001056>

Holmberg, M. J., Ross, C. E., Fitzmaurice, G. M., Chan, P. S., Duval-Arnould, J., Grossestreuer, A. V., Yankama, T., Domino, M. W., Andersen, L. W., for the American Heart Association's Get With The Guidelines–Resuscitation Investigators*, Chan, P., Grossestreuer, A. V., Moskowitz, A., Edelson, D., Ornato, J., Berg, K., Peberdy, M. A., Churpek, M., Kurz, M., ... Sawyer, T. (2019). Annual Incidence of Adult and Pediatric In-Hospital Cardiac Arrest in the United States. *Circulation: Cardiovascular Quality and Outcomes*, 12(7), e005580. <https://doi.org/10.1161/CIRCOUTCOMES.119.005580>

Karageorge, N., Muckler, V. C., Topor, M., & Hueckel, R. (2020). Using Simulation With Deliberate Practice to Improve Pediatric ICU Nurses' Knowledge, Clinical Teamwork, and Confidence. *Journal of Pediatric Nursing*, 54, 58–62. <https://doi.org/10.1016/j.pedn.2020.05.020>

22

References



Morgan, R. W., Kirschen, M. P., Kilbaugh, T. J., Sutton, R. M., & Topjian, A. A. (2021). Pediatric In-Hospital Cardiac Arrest and Cardiopulmonary Resuscitation in the United States: A Review. *JAMA Pediatrics*, 175(3), 293. <https://doi.org/10.1001/jamapediatrics.2020.5039>

Nylén-Eriksen, M., Stojilkovic, M., Lillekroken, D., Lindeflaten, K., Hessevaagbakke, E., Flølo, T. N., Hovland, O. J., Solberg, A. M. S., Hansen, S., Bjørnnes, A. K., & Tørris, C. (2025). Game-thinking: utilizing serious games and gamification in nursing education – a systematic review and meta-analysis. *BMC Medical Education*, 25(1), 140. <https://doi.org/10.1186/s12909-024-06531-7>

Olson, J., Ko, A., Nowak, K. A., Latack, K., & Bozimosky, G. (2024). Using Simulation Training to Reduce Skill Decay Among Certified Registered Nurse Anesthetists. *The Journal of Continuing Education in Nursing*, 55(4), 187–194. <https://doi.org/10.3928/00220124-20231130-22>

Usman, F. M., Jalal, A., Bansal, M., Rosamystica, M., Bansal, V., Arshad, Z., Nawaz, F. A., & Kashyap, R. (2025). The role of simulation in oncology nursing: A systematic review. *Nurse Education in Practice*, 87, 104466. <https://doi.org/10.1016/j.nepr.2025.104466>

Wise, K. M., Zinkan, J. L., Rutledge, C., Gaither, S., Norwood, C., & Tofil, N. M. (2020). Development of a "First Five Minutes" Program to Improve Staff Response to Pediatric Codes. *American Journal of Critical Care*, 29(3), 233–236. <https://doi.org/10.4037/ajcc2020407>

23
