Just-in-time educational sheets are an effective tool in the pediatric cardiac operating room to improve anesthesia trainee knowledge and comfort level

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BACKGROUND

Just-in-time (JIT) teaching is an educational strategy that creates an active learning environment

Learning outcomes, learner motivation, and learner attitudes improve when students are engaged in active learning, rather than the passive learning associated with traditional lectures.

1. Relies on feedback loops between students & instructor
2. Provides reading assignments (JIT educational sheets) and review questions to be completed prior to class
3. Uses students’ answers to identify individual strengths and weaknesses → tailor education to maximize learner comprehension
4. Increases learner motivation and allows students to gain control of the learning process

JIT has been used in the field of medicine to teach core surgical curriculum to surgical residents -
- Increased learner participation, retention, and amount of learner-centered time

JIT teaching in anesthesia education has potential to:
- Create an education platform for a common narrative between attending physician and the trainee
- Maximize intraoperative resident education, where time constraints often limit effective learning
- Individualize learning for trainees based on their aptitude and interests

METHODS

Learners → 6 pediatric anesthesia fellows at the Johns Hopkins Hospital (JHH) during the 2016-17 academic year
- The study period: August 1, 2016 to November 4, 2016

JIT educational sheets created for 20 of the most common congenital cardiac surgeries performed at JHH
- Each sheet includes specific background information of the underlying cardiac lesion, details of surgical repair, and pre-, intra-, postoperative anesthetic concerns
- Electronically distributed to the learners the day prior to the surgical operation for their review

A pre- and post-sheet test for each JIT educational sheet was made (10 questions) to assess the learner’s knowledge of the cardiac lesion, before & after reading the sheet

Using a 10-point scale, two questions were written to have the learner 1) self-assess their understanding of the cardiac lesion & 2) assess their comfort level with providing anesthesia for the procedure.
- Questions distributed using SurveyMonkey, along with the sheets
- pre-sheet test completed prior to reading the JIT sheet
- post-sheet test completed after reading the JIT sheet

RESULTS

- 36 pre-sheet & 27 post-sheet tests were completed
- Mean self-assessed comfort level:
  - pre-sheet = 4.9 (CI: 4.51 - 5.29)
  - post-sheet = 6.7 (CI: 6.27 - 7.11)
- Mean self-assessed understanding:
  - pre-sheet = 4.7 (CI: 4.28 - 5.12)
  - post-sheet = 7.3 (CI: 6.96 - 7.64)
- Question that assessed knowledge:
  - pre-sheet score = 3.6 (CI: 3.24 - 3.96)
  - post-sheet score = 6 (CI: 5.71 - 6.29)

CONCLUSION

JIT educational sheets are an effective tool to improve pediatric anesthesia trainee knowledge and comfort level when taking care of children undergoing cardiac surgery in the operating room

Future direction (second phase of study) – Educational JIT curriculum for pediatric anesthesia trainees
- Develop an educational platform – Learners will use the JIT educational sheets to review and learn about upcoming surgical cases the night prior and then answer a set of questions assessing their knowledge
- Just-in-time Feedback – The answers to these questions will become immediately available to the instructor for review
- Maximizing Learner Education – Having this immediate feedback, the instructor can then devise an intraoperative educational lesson, that best utilizes the available intraoperative time, to tailor teaching to the deficiencies of the learner

OBJECTIVE

Presented here is the first of two phases of this study:
- Determine the effectiveness of JIT education sheets in enhancing learner knowledge & comfort level when providing care for patients with congenital cardiac lesions undergoing cardiac surgery

REFERENCES