Addressing the Results of the NAP4: an Interdisciplinary Advanced Pediatric Airway Workshop

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Needs assessment:

Fourth National Audit Project highlights the themes and mechanisms of major complications related to airway management in anesthesia, critical care and emergency medicine in the UK. Exit interviews graduating fellows were not confident managing emergent pediatric airway scenarios little to no exposure to human factors training or crew resource management (CRM) during medical school and residency. Learning opportunities arose in emergency situations where patient safety concerns precluded optimal teaching and learning.

Evaluation:

10-point Likert-type scale to rate confidence in the three key psychomotor skills (IFOI, DPAW, SAW) before and after the workshop. Confidence in a fourth skill, adult fiberoptic intubation (AFOI) also measured, as a reference.

Results:

Confidence increased across all skills, with large effect sizes:

- DPAW (d=0.55 (0.30-1.40) p=0.074)
- SAW (d=0.95 (0.07-1.83) p=0.006)
- NFII (d=0.91 (0.03-1.79) p=0.006)
- IFOI (d=0.63 (0.23-1.49) p=0.042).

The overall usefulness of the workshop was rated very high (8.6).

Objective:

Address gaps in clinical practice, technical skills and human factors that were shown to lead to critical airway events. Prepare fellows for learning in the types of emergent situations they would face in fellowship.

Participants:

Pediatric anesthesia fellows
Pediatric ICU fellows
Pediatric emergency medicine fellows

Intervention:

day long pediatric advanced airway workshop with a design based on Miller’s Pyramid of Clinical Competence

- 2 week long separate “airway block” for pediatric anesthesia fellows
- Fellows participate in airway surgery cases and in cases involving patients with difficult airways for pediatric ICU fellows
- Focus on airway assessment, rescue techniques

- BEHAVIOUR high fidelity airway simulation scenarios designed to make learners use their newly acquired technical skills together with practicing CRM teamwork principles and TeamSTEPPS® communication strategies.

- COGNITION skill station practice of three essential skills:
  1) management of a difficult pediatric airway (DPAW),
  2) infant fiberoptic intubation (IFOI),
  3) establishing a surgical airway (SAW).

- PRINCIPLES of crew resource management (CRM) and TeamSTEPPS® related to managing airway emergencies on various airway topics by non-anesthesiologist airway experts

- PROFESSIONAL AUTHENTICITY pre-workshop self-study of selected test references (text book material, landmark articles) and audiovisual material compiled on a dedicated website on topics related to “knowing about” (facts) and “knowing how to” (interpret/apply facts) competently perform airway assessment, assessment of aspiration risk and follow the difficult airway algorithm as applicable to infants and children.

- BEHAVIOUR day of workshop presentation on principles of crew resource management (CRM) and TeamSTEPPS® related to managing airway emergencies on various airway topics by non-anesthesiologist airway experts

Discussion:

Data will be gathered on confidence at the end of the airway rotation and at the end of the fellowship year to measure retention. Even though both anesthesia fellows and PICU fellows reported benefit from the workshop individually, the impact of the interdisciplinary nature on the learning experience needs to be explored.

The challenges to develop metrics to measure competence are:

- assessment of nontechnical skills is subjective (albeit feasible)
- technical skills obtained on a manikin are not directly transferable to real patients

References:

Cook TM, Woodall N, Frerk C. Br J Anaesth 2011:106(5); 617-31
Miller GE. Acad Med (1990);65:s63-s67.

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