

Pediatric critical procedural skills. How to learn and how often to practice?

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Background

- Pediatric emergency physicians have low exposure to critically ill children.^{1,2}
- This low exposure has led to concerns regarding maintenance of critical airway and non-airway procedural skills.^{3,4}
- It is unknown how pediatric emergency clinicians view their educational needs regarding maintenance of these skills.

Objectives

- To determine senior pediatric emergency clinicians views on recommended frequency of practice and preferred learning modalities for critical emergency procedures.

Methods

The PERN Critical Procedures Survey

Multicenter cross-sectional survey of senior pediatric emergency clinicians working in 101 emergency departments affiliated with the Pediatric Emergency Research Network (PERN) between August 2015 and July 2016.

- Each of the six networks contributing to PERN had at least one study investigator, who invited hospitals within their network to participate in the study.
- Information about the study and an invitation to participate was emailed to a nominated researcher at each hospital. If the site was able to participate, the researcher distributed a "clinician survey" to eligible staff at their hospital.

Inclusion criteria

- Doctors who would be considered to be working in a supervisory / "senior" capacity in the ED at any time during their usual working week.
 - All attending staff
 - Specialist staff
 - Trainees / residents working night shift without more senior supervision.

Survey content

- Demographics
- Training experience
- Hours of work
- Current clinical exposure to pediatric emergency medicine practice
- Suggested frequency of practice and preferred learning modalities for eighteen critical procedures (including 7 airway and 11 non-airway procedures) in children aged 0-18 years.

Survey distribution

- Initial email
- Weekly reminders for two weeks.

Results

The survey was distributed to 2446 clinicians at 101 hospitals.

- 1524 (62%) completed at least demographic details.
- 1332 (54%) provided information on suggested frequency of practice and preferred learning modalities for the listed critical procedures.

Response rate by region

| | |
|---|------------------------|
| • Australia / New Zealand | 169/283 (60%) |
| • England / Northern Ireland / Scotland / Wales | 363/573 (63%) |
| • United States of America | 526/1062 (50%) |
| • Canada | 138/253 (55%) |
| • Europe | 106/195 (54%) |
| • South America | 30/80 (38%) |
| Overall | 1332/2446 (54%) |

Demographic details

- 54% female
- Specialist qualifications: 39% Pediatrics and PEM; 16% Pediatrics alone; 17% Emergency Medicine alone; 16% no specialist qualification; 5% PEM alone
- Median of 25 (IQR 18-32) clinical hours per week
- 55% worked in PEM 100% of clinical hours

Figure 1. Recommended frequency of practice for critical procedures

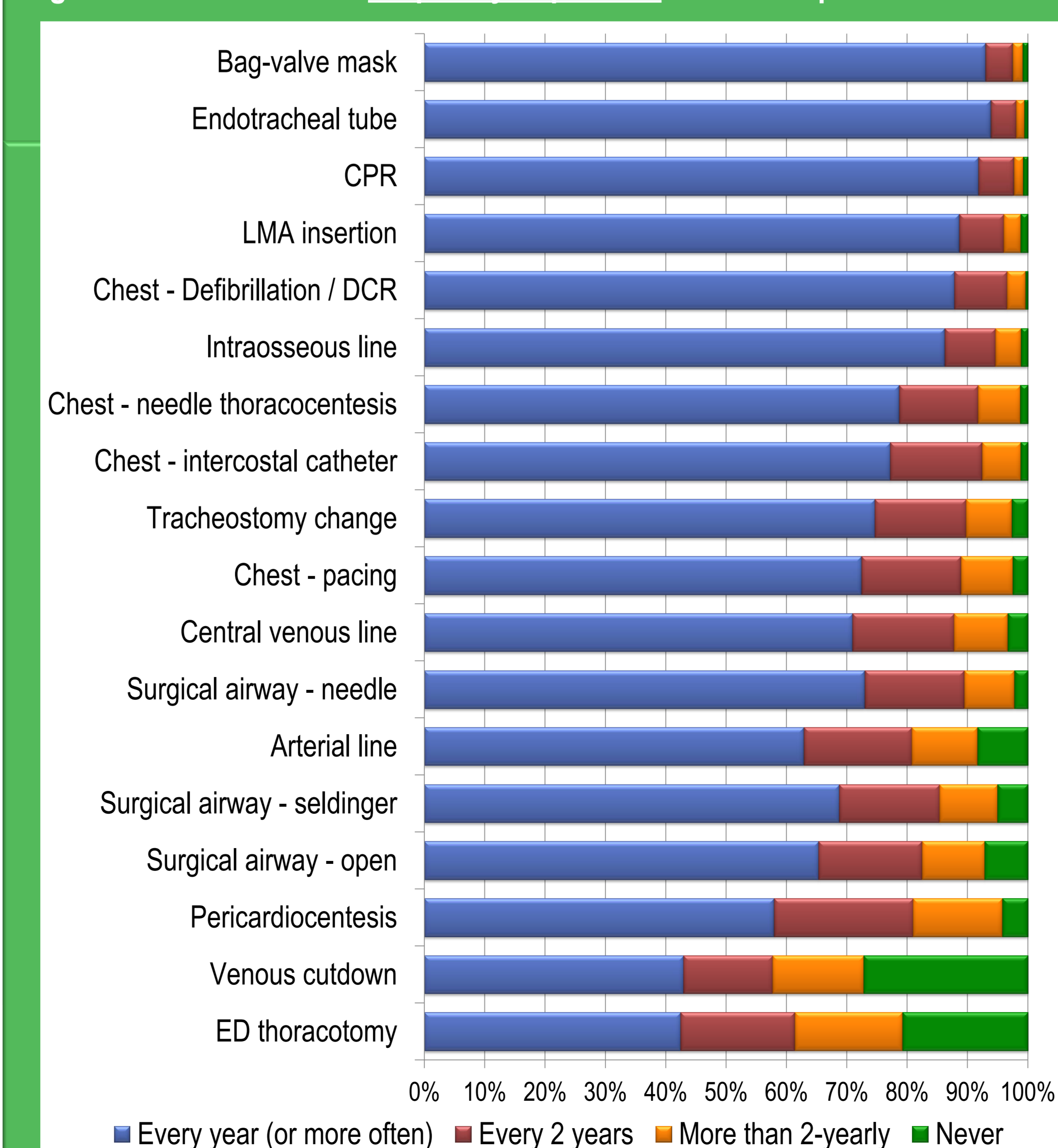
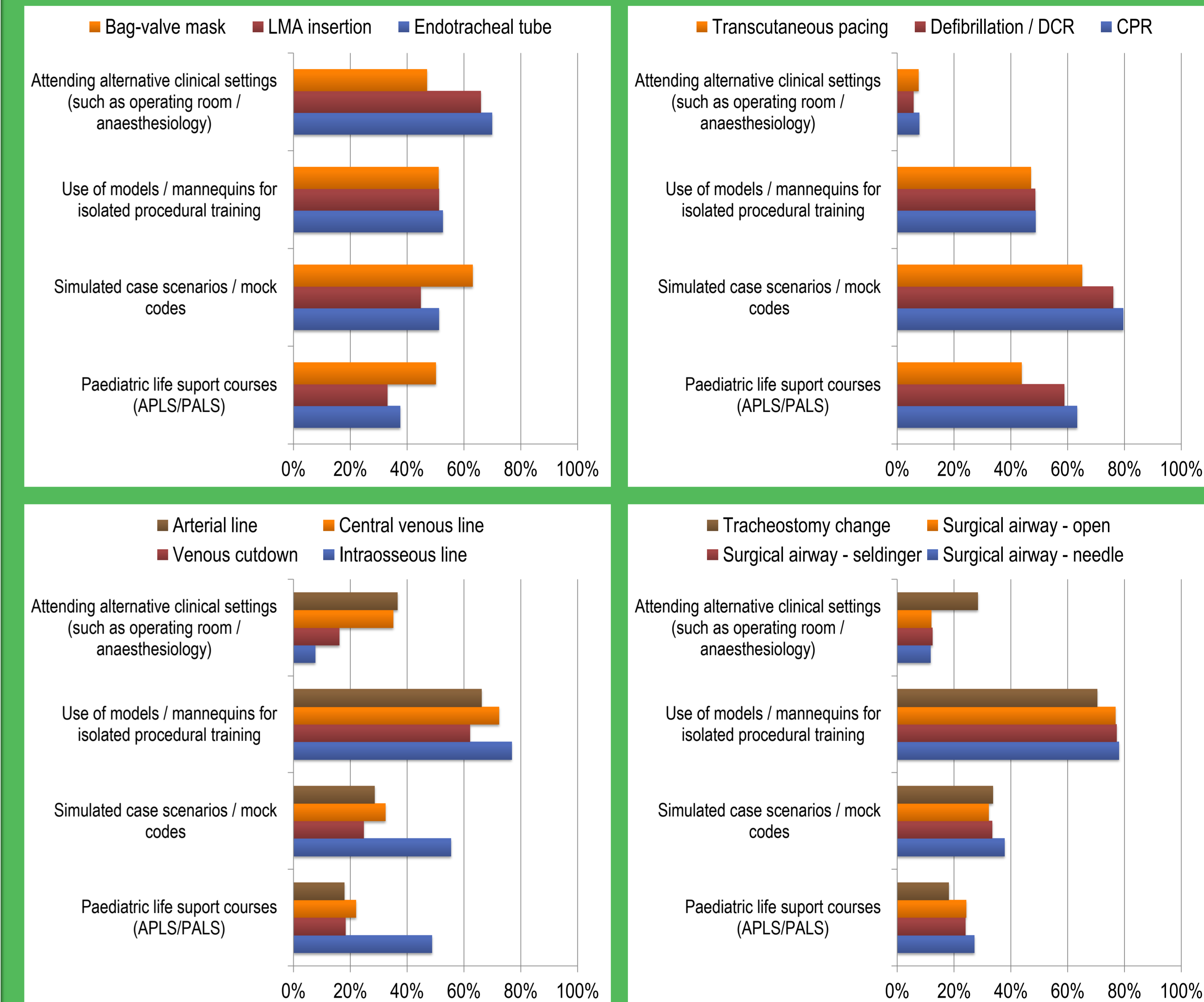


Figure 2. Percentage of respondents selecting each preferred learning modality for selected critical procedures



Conclusion

- Senior pediatric emergency physicians believe that most critical procedural skills should be practiced at least annually.
- However, any training in venous cutdown and ED thoracotomy is thought to be unnecessary by a significant minority of pediatric emergency physicians.
- The choice of learning modalities for maintenance of critical procedural skills depends on the skills being practiced:
 - Alternative clinical settings (such as anesthesiology) are preferred for endotracheal intubation and laryngeal mask insertion.
 - Simulated case scenarios are preferred for transcutaneous pacing, defibrillation / DC cardioversion and CPR.
 - Models / mannequins are preferred for most other invasive procedures, including surgical airways and advanced vascular access techniques
- This data, from a large population of senior pediatric emergency clinicians, should inform the development of CME activities to maintain critical procedural skills for PEM practitioners.

References

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