

Neonatal intubation experience and training: Results of a multinational pilot survey



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Background:

Neonatal endotracheal intubation is potentially a life-saving procedure for neonates with respiratory failure. Hence, it is a vital skill for paediatricians to acquire and maintain. However, trainees are faced with less opportunities to intubate in clinical practice¹ with success rates reported to be <25% of attempts in some studies^{2,3}.

Aim: To learn about the experience and training in neonatal intubation amongst European doctors.

Methods:

We conducted a pilot questionnaire study at "The 2018 European Symposium on Delivery Room Management" (Dresden, Germany). The survey included 56 questions and focused on:

- Term and preterm neonatal intubation:
 - Experience
 - Success rates
 - Confidence
- Personal and institutional training in neonatal intubation.
- Use of video-laryngoscopy (VL) and laryngeal mask airway (LMA)

Results:

The meeting was attended by 150 physicians. A total of 50 doctors responded to the survey, from 9 European countries (Figure 1) (Response rate 33%). 90% of respondents had >2 years' experience in neonatal medicine. Respondents' experience and success rates are shown in Figures 2 and 3; 34% reported no formal training in neonatal intubation. Rates of VL use are shown in Figure 4; 24% had used LMA in clinical practice. Figure 5 shows the experience and success rates of the 10 respondents who reported they were NOT proficient at intubation



Figure 1: Respondents by country

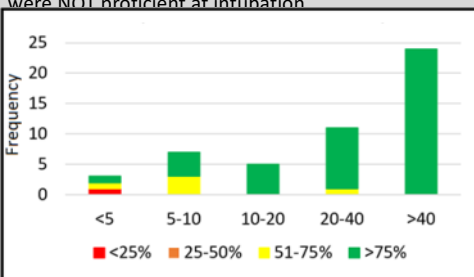


Figure 2: Self-reported success rates by number of TERM intubations performed

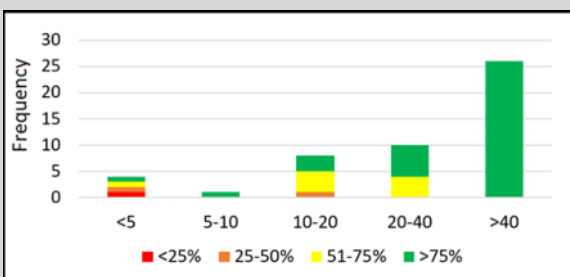


Figure 3: Self-reported success rates by number of PRETERM intubations performed

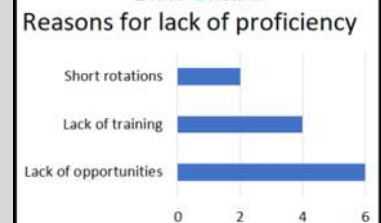
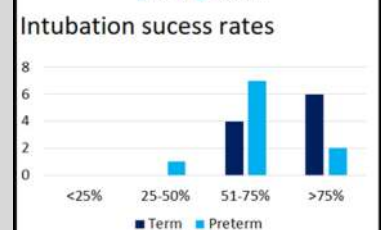
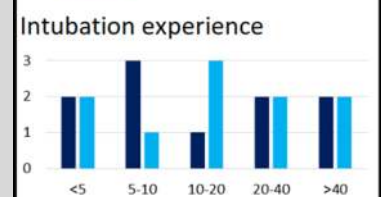
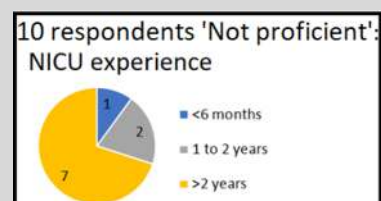


Figure 5: Respondents who reported that they did not feel proficient at intubation

Discussion:

Approximately half of respondents claimed **experience** of >40 term and preterm intubations.

Routine use of a VL was found by Foglia et al⁴ to decrease adverse events during intubation. VL allows a trainer to more effectively guide the trainee during intubation attempts, e.g. identifying anatomical landmarks. However, use of VL was practiced by only 12% of respondents. The high cost of VL equipment may account for this.

Of the 10 respondents who rated themselves as **not confident** with intubation, some reported experience of over 40 procedures, suggesting that the procedure must be carried out many times to feel confident. Conversely, some respondents reported a success rate of <25%, but felt proficient. This may reflect ambiguous wording of the question and incomplete understanding rather than a true result.

We acknowledge the limitations of a questionnaire study. Several biases are likely: Self-reported success rates are known to be higher than the recorded success rates, highlighting that inaccuracy is common in self-reporting. Small sample size is another limitation of this survey. Selection bias: Respondents attending the conference were likely to have a keen interest in neonatology. Thus, this survey may be overestimating the experience, success and confidence levels felt by the average trainee paediatrician.

References: 1. O'Shea, J.E.; Thio, M.; Kamlin, C.O.; McGory, L.; Wong, C.; John, J.; Roberts, C.; Kuschel, C.; Davis, P.G. Videolaryngoscopy to Teach Neonatal Intubation: A Randomized Trial. *Pediatrics* 2015, *136*, p 912–919. (image, Figure 4) 2. Downes KJ, Narendran V, Meinen-Derr J, McClanahan S, Akinbi HT. The lost art of intubation: assessing opportunities for residents to perform neonatal intubation. *Journal of Perinatology*. 2012; 32(12): 927–932. 3. Haubner LY, Barry JS, Johnston LC, et al. Neonatal intubation performance: room for improvement in tertiary neonatal intensive care units. *Resuscitation*. 2013; 84(10): p 1359–1364. 4. Poupirt NR, Nassar R, Napolitano N, Nawab U, Nishisaki A, Nadkarni V, Ades A, Foglia EE. Association Between Video Laryngoscopy and Adverse Tracheal Intubation-Associated Events in the Neonatal Intensive Care Unit. *J Pediatr*. 2018.

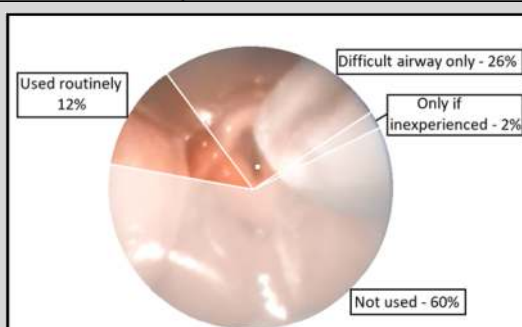


Figure 4: Use of VL for intubation at respondents' institutions

Conclusions:

The high self-reported success rates are likely to reflect the select population's level of experience. Despite this, many report not to have had any formal training. **Intubation is a skill which requires regular practice to achieve ongoing proficiency.** There is **emerging evidence for the use of VL and LMA in training and in clinical practice.** A similar survey is ongoing in the UK, where experience of intubation procedure is felt to be sparse, with the **aim of developing a training programme for neonatal intubation, incorporating VL and LMA.**