CRITICAL CARE

LETTER

Training and experience are more important than the type of practitioner for intubation success

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See related research by Lossius *et al.*, http://ccforum.com/content/16/1/R24

A meta-analysis by Lossius and colleagues demonstrated a higher endotracheal intubation (ETI) success rate for physicians compared with nonphysicians [1]. We re-analysed the data from Lossius and colleagues to investigate the relationship between the clinicians' levels of training and ETI success rates, utilising the 'Overview of included studies' spreadsheet published online as an additional file. We created a variable for a high level of ETI training taken from the 'extensively trained' description in the 'EMS manning' column. We assumed the physicians to also be highly trained in ETI, as they entirely comprised emergency physicians and anaesthesiologists. Our multivariate meta-regression analysis, adjusting for the training and the type of practitioners, found a 2% difference in intubation success (P = 0.12) between physicians and nonphysicians (Table 1), which was not statistically significant. Rapid sequence induction was left out of the final model, because all physicians utilised this induction and its inclusion would needlessly inflate variance.

Lossius and colleagues compared ETI success rates of highly trained anaesthesiologists and emergency physicians from northwestern Europe with paramedics and nurses from the rest of the world [1]. One study incorporated in their meta-analysis included rural basic emergency medical technicians with no previous ETI experience [2]. Perhaps unsurprisingly, the authors showed increased ETI success rates for highly trained physicians compared with such a varied group of nonphysicians. However, our re-analysis suggests that the differing level of ETI training between clinicians, not the type of clinician, might be more important for successful ETI.

Table 1. Predictors of intubation success, univariate versus multivariate regression model

Predictor	Unadjusted success difference	*P* value	Adjusted success difference	*P* value
Training of clinician (reference: lower experience)				
Extensively trained	0.08	0.0001	0.07	0.001
EMS manning (reference: physician)				
Nonphysician	–0.04	0.01	–0.02	0.12
RSI (reference: no RSI)				
RSI	0.07	0.0005	–	–

EMS, emergency medical service; RSI, rapid sequence induction.

Authors' response

Hans Morten Lossius, David J Lockey and Jo Røislien

Thank you for your interest in our recently published paper [1]. Our article makes it quite clear that we consider training of key importance in intubation success rates. While training may be more important than the type of provider, the type of provider is often a marker of level of training. We point out that there is considerable variability in paramedic training, and to a lesser extent physician training, in different emergency medicine systems. However, well-trained anaesthesiologists are likely to have more training and experience in advanced airway management than even well-trained paramedics. We looked at one large study involving paramedics trained to a high level, higher than most emergency

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medicine systems are able to resource, and found that intubation failure rates were higher than for undifferentiated physician intubation. We believe our publication provides evidence that paramedics, even with good training but limited regular exposure to advanced airway management, have a higher intubation failure rate than physicians with high exposure to in-hospital and out-of-hospital advanced airway management.

Advanced airway management must be considered a complex intervention in which the ETI procedure is one of many factors influencing outcome [3,4]. In-hospital advanced airway management is the responsibility of specialist physicians working in high-dependency units. Prehospital advanced airway management is even more challenging due to environmental factors and arbitrary patient information. Successful airway management is dependent on a comprehensive understanding of pathophysiological processes and high competence in advanced corrective interventions, and is not equivalent to good technical skills in ETI alone.

Abbreviations
ETI, endotracheal intubation.

Competing interests
The authors declare that they have no competing interests.

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