

## References

1. Coyle MJ, Tyrrell R, Godden A, et al. *Br J Oral Maxillofac Surg* 2013; **51**: 493–6
2. Moubayed SP, Barker DA, Razfar A, et al. *Otolaryngol Head Neck Surg* 2015; **152**: 250–4
3. Gupta K, Mandlik D, Patel D, et al. *J Craniomaxillofac Surg* 2016; **44**: 1310–3

## National electronic difficult airway database and Alert Card: a UK experience

A. Sajayan<sup>1</sup>, K. Ponnusamy<sup>2</sup> and F. Mir<sup>3</sup>

<sup>1</sup>University Hospitals, Birmingham, UK, <sup>2</sup>Hamad Medical Centre, Doha, Qatar and <sup>3</sup>St George's Hospital, London, UK

The incidence of difficult intubation varies between 1% and 18% during a general anaesthesia.<sup>1</sup> A history of previous difficult intubation is regarded as the single most important predictor of subsequent difficult laryngoscopy and intubation.<sup>2</sup> Airway societies around the world recommend that the anaesthetist should communicate any difficulty encountered in airway management to the patient and the primary caregiver soon after the event. Despite the recognised benefits of this timely communication, this information is neither standardised nor consistent.<sup>3</sup> We are not aware of any other well-established national, secure, electronic difficult airway database for adult patients anywhere in the world that is accessible anytime of the day.

The Difficult Airway Society UK (DAS) ran a pilot project for 24 months to ascertain the feasibility of such a database. The interested hospitals were registered to the project through a local lead, who obtained local information governance approval. Data were submitted through a secure online form on the DAS website, after taking explicit consent from the patients. Submitted clinical data were stored anonymously on an International Organization for Standardization certified server based in the UK, and any patient identifiable information was forwarded as an encrypted message to an offline computer kept at a NHS premise. DAS sent an alert card with a unique code, which can be used to access data from the website 24/7 by doctors registered to the DAS website or are on the GMC register.

We received 230 submissions from 24 hospitals during the pilot period. The collected data included the type of event, patient characteristics, time of the procedure, grade of primary anaesthetist, and the rescue airway management method amongst other details. At the end of the pilot, we conducted a

survey of the leads and their experience and suggestions were incorporated in the main project launched in November 2018. Currently the project caters for 79 hospitals across the country, and many more are in the process of joining.

Our experience suggests that it is feasible to provide a secure, national, online difficult airway database that is accessible at any time of the day. The users, both patients and the anaesthetists, have reported it to be a very useful safety initiative.

## Funding

Difficult Airway Society-UK.

## References

1. Naguib M, Scamman FL, O'Sullivan C, et al. *Anesth Analg* 2006; **102**: 818–24
2. el-Ganzouri AR, McCarthy RJ, Tuman KJ, et al. *Anesth Analg* 1996; **82**: 1197–204
3. Malo J, Hypes C, Natt B, et al. *SWJPC* 2018; **16**

## Face-to-face videolaryngoscopy-assisted tracheal intubation: does the hand matter?

S.V. Shah, M. O'Connor, C. Lewis, J. Stephens, D.J. Vaughan and R.S. Chaggar

Northwick Park Hospital, London, UK

Awake videolaryngoscopy is an evolving option for difficult airway management.<sup>1</sup> Awake videolaryngoscopy-assisted tracheal intubation (VATI) performed face to face with the patient has two crucial consequences for the operator. Firstly, if the videolaryngoscope (VS) is held in the operator's left hand (the traditional hand used to hold the handle), directing the tracheal tube (TT) with the right hand will involve a crossover of their arms. Secondly, the glottis view and the direction the tube will be manipulated is altered because of the 180° view rotation. Here we describe our investigation into the effect of the operator holding the VS in their left or right hand and directing a TT with their other hand.

Anaesthetist volunteers were asked to perform face-to-face VATI on a manikin. The times to the glottis view and the TT passing through the vocal cords were recorded. Each participant performed the procedure twice – holding the VS and directing the TT with alternate hands. Participants were asked to rate their perceived ease of tracheal intubation for both attempts.

**Table 5** Times to glottis view and tracheal tube through cords and perceived ease of videolaryngoscopy-assisted face-to-face tracheal intubation on a manikin.

	Attempt 1		Attempt 2	
	Left (n)	Right (n)	Left (n)	Right (n)
Hand holding videolaryngoscope (n)	Left (15)	Right (8)	Left (8)	Right (15)
Mean (range) time to glottic view (s)	12 (4–35)	26 (8–102)	11 (3–25)	6 (2–10)
Mean (range) time to tube through cords (s)	42 (8–118)	45 (10–156)	20 (6–41)	50 (16–125)
Tracheal intubation in <60 s, % (n)	80 (12)	75 (6)	100 (8)	87 (13)
Tracheal intubation in >60 s, % (n)	20 (3)	25 (2)	0 (0)	13 (2)
Participant perception of procedure as easy or neutral, % (n)	47 (7)	63 (5)	100 (8)	60 (9)
Participant perception of procedure as difficult, % (n)	53 (8)	37 (3)	0 (0)	40 (6)

n, number of participants.

There were 23 participants with a range of experience: six had performed less than 20, eleven between 20 and 50, and six participants had performed more than 50 conventional (asleep) VATIs. Holding the VS with the left hand and directing the TT with the right hand was associated with a faster time to successful tracheal intubation (Table 5).

This small study shows that anaesthetists who are familiar with traditional videolaryngoscopy find it easier to hold the VS in their left hand and direct the TT with their right hand in face-to-face intubation attempts. Both groups perceived their second attempt at this procedure to be easier, which may be explained by a learning effect from the first attempt on the second attempt. This study shows that face-to-face VATI is a technique in which the logistics and ergonomics need to be practised in a non-emergent situation.

## References

- Wilson W, Smith A. *Anaesthesia* 2018; 73: 1058–61

## Pressure in the airway under apnoeic oxygenation with different nasal flow rates: a randomised controlled study

Julian Meyer<sup>1</sup>, Lorenz Theiler<sup>1</sup>, Dominik Obrist<sup>2</sup>, Robert Greif<sup>1</sup> and Thomas Riva<sup>1</sup>

<sup>1</sup>Department of Anaesthesiology and Pain Therapy, Bern University Hospital, University of Bern, Bern, Switzerland and <sup>2</sup>ARTORG Center for Biomedical Engineering, University of Bern, Bern, Switzerland

High-flow nasal cannula therapy (HFNCT) is recognised to avoid desaturation during airway management.<sup>1</sup> Studies in spontaneously breathing patients showed a linear relationship between flow rate and positive airway pressure in the nasopharynx.<sup>2</sup> Increasing airway pressure is discussed as a beneficial mechanism of HFNCT. In apnoeic adults under anaesthesia, there is no data on subglottic pressures generated with HFNCT.

With Ethics Committee Bern approval and written informed consent, this study investigated airway pressures generated by HFNCT in apnoeic patients with opened and closed mouth, using different flow rates in a randomised order (1, 20, 40, 60, and 80 L min<sup>-1</sup>). Standard anaesthesia induction agents and neuromuscular blocking agents were administered. Jaw thrust was applied to ensure upper airway patency. Airway pressure was measured in the right main bronchus 2 cm from carina, in the middle of the trachea, and in the pharynx above the vocal cords with a 11 Fr airway-exchange catheter (COOK Medical, Bloomington, IN, USA), placed under fibrescopic control, connected to a pressure transducer. Each measurement at each position with each flow was performed randomised with open and closed mouth.

Twenty patients undergoing elective surgery were included (38 [18] yr old, BMI 25 (3) kg m<sup>-2</sup>, nine females, ASA physical status classification: 1 [35%], 2 [55%], and 3 [10%]). A non-linear increase of pressure with closed mouth and higher flow rates was observed (Fig. 5). With open mouth, there was only a minimal increase in pressure (Fig. 5). No difference in pressures was observed between bronchus, trachea, and pharynx.

These preliminary results show the generation of a flow-dependent positive airway pressure in the airway of apnoeic

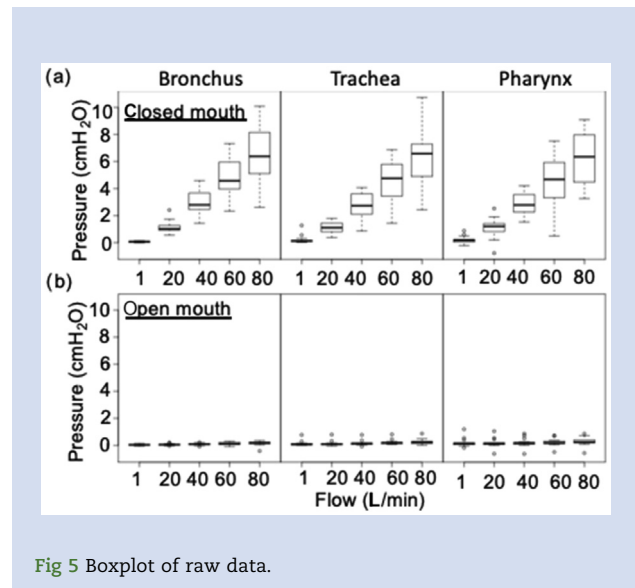


Fig 5 Boxplot of raw data.

patients with closed mouth under HFNCT. Surprisingly no relevant pressure increase was observed while the patient's mouth was open. This challenges the mandate to keep the mouth open during HFNCT and the alleged mechanism of positive airway pressure generation as an important physiological mechanism of oxygenation during apnoea. Furthermore, airway pressures remained below 10 cm H<sub>2</sub>O despite flow rates of up to 80 L min<sup>-1</sup>, suggesting that HFNCT may represent a safe option even if the mouth is closed. During this study, we never observed pressure levels possibly causing lung injuries.

## Funding

Cook Medical (airway-exchange catheters).

## References

- Patel A, Nouraei SA. *Anaesthesia* 2015;70: 323–9
- Parke RL, Bloch A, McGuinness SP. *Respiratory Care* 2015; 60: 1397–40

## Preoxygenation with high-flow nasal cannula versus face mask in morbidly obese patients

J. Rosén, D. Fors and P. Frykholm

Department Of Surgical Sciences, Section of Anaesthesiology and Intensive Care, Uppsala University, Uppsala, Sweden

Morbidly obese patients have reduced functional residual capacity, putting them at increased risk of critical desaturation during induction of anaesthesia.<sup>1</sup> We aimed to compare the heated humidified high flow nasal cannula (HFNC) to standard management for preoxygenation, and oxygenation during apnoea and tracheal intubation in this patient population.

We report preliminary data from a randomised, single-centre, open-labelled, controlled trial. After approval by the local ethics committee and written informed consent, patients scheduled for bariatric surgery were randomly assigned to