Byhahn and Cavus *Critical Care* 2012, **16**:162
http://ccforum.com/content/16/5/162

CRITICAL CARE

COMMENTARY

Airway management disasters in the ICU - lessons learned?

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See related research by Noppens *et al.*, http://ccforum.com/content/16/3/R103

Abstract

The C-MAC video laryngoscope substantially reduced poor glottic views and increased intubation success in ICU patients with at least one predictor for difficult intubation. However, all video-assisted and optical intubation devices have different view angles, thus producing different images with particular distortion, and even experts in 'old-fashioned' airway management need a substantial level of training with a certain device before using it safely and successfully in critical situations and patients. Video laryngoscopes, regardless of a particular brand or device, cannot be used intuitively - they require expert skills and routines to be turned into a life-saving airway management tool.

In recent years, video-assisted intubation devices have flooded theaters, and, to a lesser extent, are also being used in ICUs. But can such new technology really contribute to making tracheal intubation in the ICU less life-threatening, or even more life-saving? Noppens and colleagues [1], in a study just published in *Critical Care*, evaluated the efficacy of the C-MAC video laryngoscope [2] for endotracheal intubation in an ICU managed by anesthesiologists and compared the results to those obtained during a previous period when conventional direct laryngoscopy was used. In patients with at least one predictor for difficult intubation, poor glottic views (Cormack and Lehane grades III and IV) were reduced from 38% to 19%, and intubation success on the first attempt increased from 56% with direct laryngoscopy to 79% when the C-MAC video laryngoscope was used. Even in all patients, the incidence of at least two intubation attempts was reduced from 7% with direct laryngoscopy to 3% with video laryngoscopy. Though this was not statistically significant, halving this incidence may have substantial clinical impact. Although the overall intubation success was 100% in either group, successful tube placement in the trachea on the first attempt is crucial in ICU patients with poor tolerance to apnea.

After implementation of a video laryngoscope, however, intubations were more often performed by less experienced physicians. This trend has to be considered carefully. Even if one reason may be that younger physicians are more open to the newer technique, it must be guaranteed that physicians' experience is not substituted solely by technical equipment. Similarly, the use of endoscopic intubation was reduced substantially in the intervention phase (4% versus 13%), so experience with such devices may decrease, causing problems if video laryngoscopy is not possible or is contraindicated.

How do these data influence our future airway management strategies in the ICU? Video laryngoscopy for every patient? Sparing such devices for the really difficult cases? To answer these questions it needs to be emphasized that all video-assisted and optical intubation devices have different view angles, thus producing different images with particular distortions, and even experts in 'old-fashioned' airway management need a substantial level of training with a certain device before using it safely and successfully in critical situations and patients [3]. Video laryngoscopes, regardless of a particular brand or device, cannot be used intuitively - they require expert skills and routines to be tamed and turned into life-saving tools. Tube placement can turn out to be difficult and even impossible, despite the excellent glottic exposure video laryngoscopes most often provide. The reason is that the operator's eye is no longer in a straight - optical and anatomical - line with the larynx, but at the tip of the laryngoscope blade. Optical and anatomical axes divert, and tube placement is sometimes difficult or fails [4]. Becoming alert to these potential problems associated with video laryngoscopy and constantly improving one's technical skills to overcome such pitfalls

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can only be achieved when such devices are used on a daily basis and in routine patients.

Apart from the primary aim of the study - evaluating video laryngoscopy - it needs to be highlighted that Noppens and colleagues [1] routinely used capnography to verify correct tube placement after intubation. Capnography has become a mandatory requirement in any operating room, but its use in the ICU seems still to be somewhat dowdy. As of 2010, only 25% of ICUs in the UK and the Republic of Ireland used capnography to confirm correct tube placement after intubation [5]. Such refusal may produce catastrophic outcomes: data collected from all UK National Health Service hospitals over a period of one year in 2008/2009 revealed that 61% of adverse events during airway management in the ICU resulted in death or permanent brain damage. In 74% of such fatal cases no capnography was used [6]!

Doubtless, video laryngoscopy is a helpful tool in the hands of experienced physicians, but should not be considered a bailout procedure for beginners in airway management. And as attractive and simple video laryngoscopy appears, we must always remind ourselves to maintain our skills in endoscopic intubation. Lessons learned?

Competing interests

Both authors receive continuous material support for clinical studies from Karl Storz GmbH & Co. KG, the manufacturer of the C-MAC video laryngoscope. This potential conflict of interest, however, did not bias this work.

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Published: 29 October 2012

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doi:10.1186/cc11641
Cite this article as: Byhahn C, Cavus E: **Airway management disasters in the ICU - lessons learned?** *Critical Care* 2012, **16:**162.