

**Clinical and Educational Article**

# Innovative airway assessment spurred by the COVID-19 pandemic

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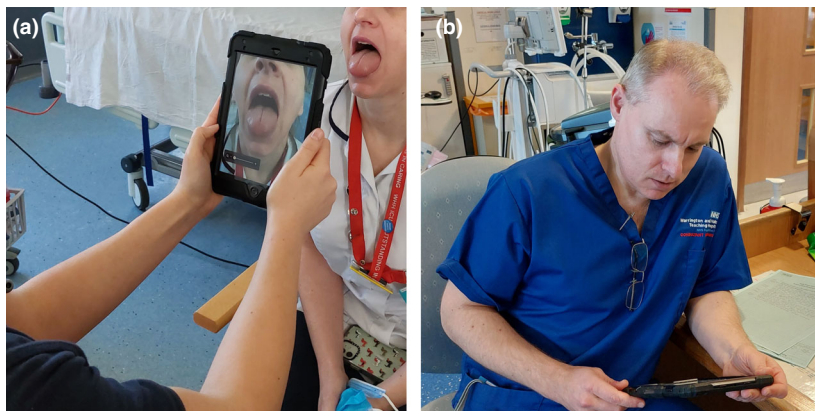
Meeting the challenges posed by the COVID-19 pandemic has been a catalyst for change in the practice of airway management. Many well-rehearsed conference debate topics have been abruptly resolved: rocuronium displaced suxamethonium for rapid sequence induction and tracheal intubation, the threshold for abandoning cricoid pressure was further lowered, use of videolaryngoscopy became more widespread and preference for a scalpel technique for emergency front-of-neck airway has been even more broadly advocated [1]. Many of these changes provide benefits that are likely to lead to their retention beyond the pandemic. However, one area of airway management which has remained dismally resistant to practice-changing innovation is that of airway assessment [2].

When intensive care units (ICUs) throughout the world catered to large numbers of pandemic victims, we were concerned about the potential for these patients to deteriorate very quickly and require urgent airway intervention. There was a need for meticulous airway and respiratory assessment with constant vigilant observation, often requiring input from senior medical staff, in circumstances that imposed significant barriers to readily accessing patients. Senior staff input into airway evaluations were often needed between providing services in geographically disparate areas of the hospital, and these comings and goings consumed large amounts of sometimes limited supplies of personal protective equipment (PPE). To mitigate this problem, we routinely stationed a junior doctor with a tablet computer (iPad Pro<sup>®</sup> 3<sup>rd</sup> Generation, Apple Inc., Cupertino, USA) in the COVID-19 clinical area. This guaranteed immediate junior medical presence at the bedside and allowed the junior doctor to use the tablet's camera to convey high-resolution images to a senior colleague via a secure video messaging app (Microsoft<sup>®</sup> Teams<sup>™</sup>, Microsoft Corporation, Redmond, USA). Consultants were thereby able to view and assess patients in real time, while limiting the frequency with which they needed to enter the unit to make clinical decisions (Fig. 1). The consumption of PPE dropped accordingly.

In our experience, we have been able to effectively provide remote senior review of deteriorating patients' respiratory status and evaluation of their airway anatomy. Only when in-person support, bedside assessment or tracheal intubation was needed were senior staff required to don PPE and attend the bedside.

We believe this approach has wider utility, especially to support resident staff out-of-hours. A (digital) picture paints a thousand words and such, use of technology could facilitate better decision-making when senior staff are off-site, particularly when clinical urgency precludes them attending in-person within the required time frame [3]. It could also aid liaison with remote clinicians for expert advice from tertiary centres. For example, video consultation with burns units including such real-time video evaluation could help determine whether tracheal intubation is actually required for 'airway burns' – a practice which is often done unnecessarily [4], and which tertiary experts would like to discourage, but cannot confidently advise against without seeing the patient.

The uncomfortable necessities of COVID-19 make it, we believe, the mother of innovations which will outlive the current pandemic.



**Figure 1** Simulated depiction of tablet-assisted airway assessment. (a) bed-side trainee utilising tablet's camera. (b) consultant observing airway exam in real time from a remote location.

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