Correspondence

Intubation of COVID patients: always a risky business?

We thank El-Boghdadly et al. for their article reporting the incidence of coronavirus disease 2019 (COVID-19) in healthcare workers following tracheal intubation [1]. Their study found a 10.7% incidence of COVID-19 following tracheal intubation in patients with confirmed or suspected COVID-19. During the same period, we conducted a prospective service evaluation at our institution to assess laryngoscopists' risk of COVID-19 acquisition. Our findings differed from those of El-Boghdadly et al. and so we present a summary of our service evaluation and a rationale for the differences.

The service evaluation was registered with Imperial College Healthcare NHS Trust and data were collected prospectively from 11 March to 30 April 2020. Inclusion criteria were: patient age > 18 years; absence of a negative COVID-19 ribonucleic acid polymerase chain reaction (RNA-PCR) test; and tracheal intubation for any indication. Following tracheal intubation, a questionnaire was completed detailing the indication, COVID-19 status of the patient and the availability and usage of personal protective equipment (PPE). Questionnaire completion was mandatory. COVID-19 status was classified as 'confirmed' (RNA-PCR test positive), 'suspected' (fever or new persistent cough, no RNA-PCR test) or 'unable to exclude' (no fever or cough, no RNA-PCR test). Clinical data were extracted retrospectively from the electronic patient record. Laryngoscopist health 5, 10 and 14 days post-intubation was obtained from the electronic staff rota, and categorised as 'healthy, at work', 'healthy, self-isolating' (due to a household member with symptoms of COVID-19) or 'sick, off work'.

The first death in London from COVID-19 occurred on 12 March 2020 at our institution [2]. This, in addition to the deficiency in local stocks, spurred the development of a steering group to establish resilient supply chains for World Health Organization (WHO) standard PPE [3]. By 17 March, we had independently sourced PPE, including reusable respirators and visors and, by 24 March, had formalised infection control, cleaning protocols and training.

Seventy-two patients' tracheas were intubated during the data collection period. The most common indications were hypoxia (n = 34; 47%) and surgical operations (n = 20; 28%). A total of 24 (33%) intubations were performed in the emergency department, 20 (28%) on a general ward, 14 (19%) in the intensive care unit and 14

Table 1 Patient COVID status and laryngoscopist health post-intubation. Values are number (proportion).

Parameter			
Patient COVID status at the time of intubation	n = 72		
Confirmed	22 (31%)		
Suspected	32 (44%)		
Unable to exclude	18 (25%)		
Patient COVID RNA-PCR status*	n = 72		
Positive	48 (67%)		
Negative	17 (24%)		
Not tested	7 (10%)		
Laryngoscopist health post intubation	*Day 5*	*Day 10*	*Day 14*
Healthy, at work	68 (94%)	68 (94%)	69 (96%)
Healthy, self-isolating	4 (6%)	4 (6%)	3 (4%)
Sick, off work	0 (0%)	0 (0%)	0 (0%)

*The result of the RNA-PCR test was not always known at the time of intubation.

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(19%) in an operating theatre. Patients' COVID-19 status and laryngoscopists' health are reported in Table 1. WHO standard PPE was available for all intubations and was used in 70 (97%) cases.

The absence of laryngoscopist illness in our service evaluation differs from the 10.7% incidence reported by El-Boghdadly et al. [1]. The potential reasons for this difference are: improved availability of PPE; reduced risk of selection bias; and a shorter follow-up period. El-Boghdadly et al. reported use of WHO standard PPE [3] in only 87.9% of cases and the level of training in the use of PPE is not reported [1]. A risk of the non-mandatory self-reporting method of El-Boghdadly et al. is the potential for reporting bias; that is, laryngoscopists who developed symptoms might have been more likely to self-report, leading to an overestimation of the incidence. In 99% of cases, the incubation period for COVID-19 is 14 days or less [4]. The use of a longer follow-up period by El-Boghdadly et al. (40 days) [1] may also have led to an overestimation, due to unrelated acquisition of COVID-19.

In summary, El-Boghdadly et al. highlight the potential risk of intubating COVID-19 patients, whereas our service evaluation demonstrates that effective procurement, usage and decontamination of WHO standard PPE can reduce this risk. If elective surgery is to be re-established whereas COVID-19 is prevalent, the focus on effective PPE must be maintained in order to minimise the risk of COVID-19 transmission to healthcare workers.

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No competing interests declared.

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doi:10.1111/anae.15196

Tracheal intubation of patients with COVID-19: global risks

We thank Mullington et al. for sharing their local data [1] in response to our data from the intubate COVID study [2]. We applaud the success of their local policies and the low rate of reported COVID-19 outcomes in healthcare workers undertaking tracheal intubation. We are also grateful to all colleagues at Mullington et al.'s institution, as we have received data from 82 tracheal intubation episodes on our registry, and thus our analysis included more intubation episodes than referred to in their letter.

We wish to highlight some considerations when interpreting the letter and our study. First, direct comparisons with our data are challenging. For example, Mullington et al. state an inclusion criterion of "*absence of a negative COVID-19 ribonucleic acid polymerase chain reaction (RNA-PCR) test*", but 17 (24%) of their patients had a negative test and should perhaps have not been included in their analysis. This was in contrast to our methodology which only sought patients with suspected or confirmed COVID-19, and thus the proportion of patients with COVID-19 in our study was likely to be greater. Moreover, the indication for tracheal intubation in our respective studies differed, as only 47% of patients in the report by Mullington et al. required tracheal intubation for hypoxia, in contrast to 67% who required tracheal intubation for respiratory failure in our data. Further, we included data from both intubators and assistants, but Mullington et al. only presented data for intubating clinicians.

Second, Mullington et al. conducted a single-centre study of 72 healthcare workers, whose baseline characteristics were unknown. Whereas this is important and of local relevance, single-centre data might have limited generalisability when compared with larger datasets, and thus caution must be expressed when

