Editorial

The COVID-19 information pandemic: how have we managed the surge?

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The severe acute respiratory syndrome Coronavirus-2 (SARS-CoV-2) or Coronavirus 2019 (COVID-19) pandemic has permanently impacted our everyday normality. Since the outbreak of this pandemic, our e-mail inboxes, social media feeds and even general news outlets have become saturated with new guidelines, revisions of guidelines, new protocols and updated protocols, all subject to constant amendments. This constant stream of information has added uncertainty and cognitive fatigue to a workforce that is under pressure. While we adapt our practice and learn how to best manage our COVID-19 patients, a second pandemic - information overload - has become our Achilles' heel.

Protocols and planning – the anticipation phase

Anaesthetists, by the nature of our work, are exposed to COVID-19, and we have been at the helm of creating pathways and guidelines to support staff and ensure safety. As leaders in patient safety [1], we have learnt and adapted process and safety improvements from other industries, most notably aviation [2]. Simple, clear and structured guidelines such as the Difficult Airway Society guidelines are important cognitive tools that help aid our decision-making processes especially in emergencies [3]. It is recognised that presenting multiple differing techniques introduces cognitive overload, confusion and increases the chance of error [4]. As we adapt our established clinical practices to deal with COVID-19, we must be cognisant to the fact that these changes potentially expose us to an increased risk of error. During this period, we do not have the luxury of time; to reflect on previous practice; to rely on large scale randomised controlled trials; or to review guidelines before publication. This is a pandemic in action, where well-intentioned guidelines, which present accurate and understood practices in one moment, are liable to frequent and drastic change. Lessons learnt from Wuhan, China and northern Italy gave other global healthcare systems a vital time advantage. This allowed them to start creating guidelines for the impending surge with the important caveat that they would require near daily revision [5]. We have seen an explosion of guidelines, released by multiple organisations, in good faith and often only differing in their visual presentation; as illustrated by infographics from Hong Kong and Italy [6, 7]. At times, guidelines from reputable

organisations have also provided contrasting clinical opinions, such as the use of high-flow nasal oxygen in patients with COVID 19 [8]. We are invariably playing 'spot the difference' between newly published guidelines; which is to be expected as we react in action rather than reflect on action. Frequent revisions, though often necessary, have the potential to create confusion, miscommunication and fear. The SARS outbreak demonstrated that strict hierarchal structures are required during a crisis [9]. Similarly, the same concept should be applied to our search for guidance regarding COVID-19. When organisations join forces (e.g. Association of Anaesthetists, Royal College of Anaesthetists, Faculty of Intensive Care Medicine, and Intensive Care Society) to produce a strong united platform with one message, there is a greater sense of trust and security for their members. In times of a pandemic, clear, simple guidelines abate fear and anxiety [9].

The role of research

We have witnessed a race to publish articles on COVID-19 with unedited proofs, pre-prints and rapid reviews articles shared readily online. These are often available prior to peer-review. Much of the commentary surrounding COVID-19 has been based on these studies, which we know to represent very preliminary forms of research. COVID-19 related papers are being published online rapidly. Our typical research standards appear to have been temporarily relaxed. High volumes of new research have contributed to an information pandemic, with elements filtering through to mainstream media, in an uncontrolled manner. Many news outlets use this research as the basis for their news stories during this news drought. We saw the use of hydroxychloroquine was heavily promoted in the media despite any positive evidence for its use [10]. There is an enormous amount of information in the ether, and unfortunately not all of it reliable, as the number of retracted papers also grows [11].

Alert fatigue

With clinical information coming from multiple sources, it is important to ensure that the most important, accurate information filters through. Information chaos leading to alert fatigue is well

recognised in the healthcare environment [12]. When increased volume of communications are sent through an increasing number of platforms, alert fatigue may impact individual's ability to recall specific messages, due to 'noise' created by the greater frequency. Information delivered too frequently and/or repetitively through numerous communication channels may have a negative effect on the ability of healthcare providers to effectively recall emergency information [13]. We live in a technological age where we can be easily accessed by emails, text-messaging and social media alerts; the magnitude of the potential for alert fatigue should be acknowledged. Keeping healthcare workers informed during a pandemic is critical and the way in which we do that needs to be co-ordinated and measured to avoid the risk of alert fatigue and potential for important information to be lost in the 'noise'.

Spread of information

The COVID-19 pandemic is demonstrating that we are utilising social media as one of our main sources for the dissemination of medical information [14]. Free open-access medical (FOAM) education networks have become popular within the last decade as a method of disseminating and learning new medical information. Collectively, we have turned away from reading paper journals to gather new information, turning to online resources, utilising social media and mass communication to learn the latest techniques, partake in journal clubs and share learning on a global platform [15]. Twitter has been awash with infographics, guidelines and innovative ideas during the COVID-19 pandemic. Non-peer reviewed information being shared and applied inappropriately or evolving into early medical practice in a pandemic presents a significant potential risk and may cause more harm than good [16]. Individuals sharing their experience of particular techniques may be interesting and thought provoking; however, we must be aware of introducing both confirmation bias and anchoring bias into our subsequent practice. The excess sharing of new guidelines, protocols, and ideas may be an issue. The 'Kardashian Index', where popular threads attract higher impressions and interactions, can help the spread of information that may not represent best practice [17]. Non-

researched methods such as the aerosol box for tracheal intubation, modifying snorkel masks as facemasks and methods of sharing or splitting a single ventilator between two patients with acute lung injury have been discussed widely and debated on social media. These methods although novel, interesting and well-intended, differ from our normal practice and as such should attract caution if used during a global pandemic.

Personal protective equipment

Knowledge and debate surrounding personal protective equipment (PPE) has been one of the most prominent COVID-19 discussion points, due to the high risk of contagion via droplet spread [18, 19], contributing further to the information pandemic. Personal protective equipment guidelines have differed both at a national level, as seen with the contrasting advice from Public Health England and the Resuscitation Council UK regarding PPE required for cardiopulmonary resuscitation, as well as globally depending on numerous factors such as local availability and procedures being performed. The deluge of 'PPE selfies' online have encouraged visual comparison of PPE across the world. The constant revision of guidelines in response to new evidence and availability of PPE can add to increasing individual anxiety and fear.

The surge in pictures of PPE-clad healthcare workers across social medi, has also illustrated how uncomfortable, unnatural and frightening their use is, for patients and staff alike. Personal protective equipment-themed profile pictures have become popular across social media leading to questions over the use of them as a source of medical information dissemination and the ethics of posting pictures taken of PPE, particularly in the clinical environment. We too have a duty to monitor and filter the information we share.

Wellbeing

As anaesthetists, the mental, physical and emotional demands that come with the job and the external factors, like working long hours and rota gaps, which can take their toll on our health, are

recognised. This is reflected in the development of resources surrounding well-being and fatigue such as the Fight Fatigue campaign from the Association of Anaesthetists and their guideline on fatigue [20]. We are leaders in the area of well-being. The acknowledgement of the huge burden, both physical and mental, of working in a pandemic is important. The large number of healthcare professionals who have been infected with COVID-19 as well as the ones who have lost their lives serve as a reminder to us of our own vulnerabilities. There has been some excellent information collated about maintenance of well-being during this crisis [21]. A study from China looking at the impact of social media on mental well-being during the COVID-19 outbreak found there to be a high prevalence of mental health problems associated with frequent social media use [22]. As part of our response to managing stress and minimising burnout, it is important to appreciate the impact that information overload and cognitive load has had on us. Modifying our social media use and consumption of general news is important to support our mental well-being.

Learning and decision-making in the spotlight

We have witnessed an increase in public interest, awareness and knowledge of the role of the anaesthetist in healthcare due to this pandemic. We know from previous research the public's knowledge of the role of the anaesthetist can be limited [23]. Google trends worldwide have shown a surge in searches for the word 'ventilator' and the term 'PPE' since the beginning of March 2020. For the first time ever, an anaesthetist featured on the front cover of *Time Magazine* [24]. We find our specialty in the spotlight. Although long-term effects of increased public knowledge about our healthcare role may prove positive, we must also recognise with added exposure comes added pressure. There has been much debate publicly surrounding the allocation of resources such as intensive care beds and ventilators and the limitations of treatment for some patients, which has served to highlight the difficult ethical decisions which we face on a daily basis. This increased focus within mainstream media makes it difficult to escape the day job. We need to utilise the well-being and psychological supports on offer to give ourselves some time away from intensity of the day job.

This growing interest in who we are and what we do is another example of the surge in information associated with COVID-19.

The future

As we learn to live with this virus it is important for us to be cognisant that we are all at risk of error; we need to work to reduce information overload and focus on unifying our approach to both information dissemination and presentation. We must go back to basics and apply the well-practiced human factors principles of good teamwork, communication and leadership. In terms of our mental health, we must allow for non-COVID-19 time, including regular breaks away from social media as well as being mindful of what we post and share. We must take advantage of our time in the public limelight to fight for better resources and funding for critical care and anaesthesia going forward. We need to avoid a situation where a crisis is overmanaged and underlead; "*Ipsa scientia potestas est*" or 'knowledge itself is power' – from what COVID-19 is teaching us however, can too much knowledge be a bad thing?

Acknowledgements

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