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The value of anaesthesiologists in the COVID-19 pandemic – a model for our future practice?

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The COVID-19 pandemic places health care systems under extreme pressure. As the infection spreads, the number of infected patients requiring hospital admission was often overwhelming, displacing care for other groups. Many required ICU admission.¹ In places, the (expected) number of patients requiring ICU admission far exceeded the number of ICU beds **and care providers** normally available. Hospitals therefore doubled or tripled their ICU capacity by decreasing or halting elective surgery and establishing ICU beds in empty operating rooms and postoperative anaesthesia care units.¹

The anaesthesiologist's role in COVID-19

Historically and currently, the majority of physicians practicing Intensive Care have trained in anaesthesia and a high proportion continue some anaesthetic practice. Whilst mono-specialty intensivists form an important component of the ICU workforce and are well represented in specialty leadership, their numbers are small. Therefore, anaesthesiologists - usually redeployed from the operating rooms - have provided most of the medical care in temporary COVID-19 ICUs.

The leading role of anaesthesiologists in the care of COVID-19 patients **in Europe** makes sense. Most patients admitted to the ICU require invasive mechanical ventilation after endotracheal intubation.¹ Because procedures with aerosolization create the highest risk of COVID-19 infection, they should be performed by the most experienced care provider. Since anaesthesiologists are particularly experienced in airway management, intubations in COVID-19 patients are performed by them, putting them at risk of viral transmission.^{2, 3} Moreover, even with increased ICU capacity, in some hospitals the number of patients requiring mechanical ventilation may exceed the number of beds, and anaesthesiologists are commonly responsible for transferring critically ill patients between hospitals.

Finally, COVID-19 patients on non-ICU wards may develop respiratory insufficiency very rapidly. Anaesthesiologists are able to support their generalist colleagues in the care of these patients through ICU-outreach and remote vital signs monitoring.⁴

Thus, the COVID-19 pandemic has showcased the skills of anaesthesiologists as team workers, consultant physicians for the critically ill and as medical managers, strategists and leaders.⁵ Unusually, our specialty has caught the public eye including the appearance of an anaesthesiologist on the cover of an April 2020 issue of Time magazine. However, before we become too pleased with ourselves, we should reflect on our specialty's journey and develop strategies for our future development.

Anaesthesiologists outside the Operating Room

Although anaesthesiologists dominated the emergence of Intensive Care,⁶ a significant proportion of us are careful to avoid the ICU. Whether this reflects anxiety around care of the critically ill or the attractions of private practice and diminished out of hours working remains uncertain. As with both dinosaurs and mammals, Intensive Care Medicine has evolved differently on different continents. The European model has always been inter-disciplinary and is today profoundly competency based.^{7, 8} Anaesthesiologists remain at the centre but do so as part of a specialist intensivist community which is well organised and confident. In the US, surgical leadership of ICU management is commonplace, although an intensivist model may improve outcomes whilst reducing costs.⁹ Issues of control - of patient care and the income that the care generates - may contribute to expectations of surgical autonomy. In 2008 the American Board of Surgery stated confidently 'Surgical critical care is a specialty of surgery...'

(www.absurgery.org). At the turn of the millennium, a Special Article in Anesthesiology warned 'Today the American critical care anesthesiologist is an endangered species, overshadowed in numbers and political clout by colleagues from pulmonary medicine and surgery.'¹⁰ The authors went on to advocate '...substantial reengagement in the practice of Critical Care Medicine'. Still, in 2020 few anaesthesiologists become intensive care providers. Five years later, in 2005, the American Society of Anaesthesiologists (ASA) task force on paradigms of anaesthesia practice in 2025, proposed that 'No doubt, health care delivery systems, and hospitals in particular, will favour the specialty that provides more overall value and diversity of practice paradigms.'¹¹ Eventually, in 2013 the ASA proposed the Perioperative Surgical Home, 'A coordinated system of perioperative care'. Although carefully annotated to make clear that it wasn't intended to usurp surgical leadership, this was nevertheless a common surgical view. In consequence, the concept has achieved limited traction (Figure 1). In contrast, the implementation of Enhanced Recovery after Surgery is near universal and anaesthesiologists who run pre-assessment clinics, provide Cardio-Pulmonary Exercise Testing and engage with prehabilitation ahead of an ERAS driven surgical episode, are readily accepted as perioperative physicians. It may simply be a matter of presentation, but the Perioperative Surgical Home looked like a land-grab by anaesthesiologists. We should learn from that experience.

Intra-operative care

Perhaps we could fall back to the operating rooms? We would do so at our peril. Almost every aspect of anaesthetic practice is under challenge by new technologies and alternative providers. Our equipment is becoming smarter and

fluids, hypnotics, analgesics and muscle relaxants can all be delivered by closed-loop systems.¹²

Laryngeal mask airways service the vast majority of spontaneously breathing patients, bypassing the traditional bag and mask skills. Video laryngoscopes and other devices facilitate tracheal intubation and we are well on the way to deployable robotic intubation of the trachea.¹³ These technologies subtract from the "craft" dimension of the anaesthesiologist's traditional skill set. New drugs with shorter duration of action, cleaner profiles and easier use and titration have simplified the mission, thus paralysis is easier to manage with atracurium than using curare or pancuronium. Sevoflurane is easier to use than halothane.

Attempts by anaesthesiologists to restrain the use of "their" drugs by emergency physicians¹⁴ or nurse sedationists¹⁵ come across as self-interested and financially motivated rather than patient centred and evidence based.¹⁶ American anaesthesiologists find their operating room practice challenged by nurse anaesthetists who appear **to work as safely as** their medically qualified colleagues when embedded in mixed care teams.¹⁷ Liberalization of supervisory requirements may markedly expand nurse anaesthetists' scope of practice. Non-medical anaesthesia is well established in several continental European countries,¹⁸ slowly developing in the UK¹⁹ and is routine in much of the third world.

In short, the core specialty of operating room anaesthesia is under threat.

Specific skills of anaesthesiologists that add overall value

What to do? What are we left with? The pandemic has been an opportunity for anaesthesiologists to showcase their skills. These skills were used successfully in the whole process of distributing care in the COVID-19 pandemic, both to COVID

and non-COVID patients. For the moment we have the eye of all of the hospital and much of the general public. We have a moment (arguably a brief one...) to exploit this as an opportunity to reposition our specialty for the future.

Anaesthesiologists should head towards the challenges. Giving a few mL of propofol for sedation during colonoscopy is not the work of a specialist – it can be safely managed by a nurse. Anaesthesiologists are specialized generalist physicians, with extensive knowledge of the (patho)physiology of organ systems both under normal and stress conditions and are trained to mechanically or pharmacologically influence these systems. We should use that knowledge. Likewise, within and beyond the operating rooms – we should be going the 'hard yards' – working as perioperative physicians managing complex patients at each stage of their perioperative journey. Anaesthesiologists, as team players with little distance between physician and non-physician care givers, as efficient planners and controllers, should facilitate multidisciplinary collaborations outside the operating room.

COVID-19, a new starting point

If anaesthesia is going to redefine its position (as it must) then it all has to be earned, none of it will be given. The failure of the "Perioperative Surgical home" language attempted by the American Society of Anesthesiologists is something to learn from. **If surgeons and administrators are going to share leadership of perioperative care with anaesthesiologists**, in its broadest sense, then it will be because we have demonstrated that it is the way to produce better quality patient care (measurably), cheaper care, faster care and more satisfying (to all parties) care. No one else is going to do this for us.

Recently, the European Society of anaesthesiologists has announced a name change to embrace Intensive Care and is now in the preliminary skirmishes of a battle with the European Society of Intensive Care Medicine.

(www.esahq.org/esa-news/esa-2020-general-assembly-message-from-the-presidents/). The outcome of such boundary disputes will be resolved by evidence and not by rhetoric. Intensive Care was once an anaesthesiologists hegemony, but those days are long gone. If anaesthesiologists are to call ourselves intensivists and perioperative physicians then we have to earn the right to do so by generating respect from our colleagues – in medicine, surgery and management.

The scope and versatility that anaesthesiologists have demonstrated during the COVID-19 pandemic has to become daily routine practice. We can take responsibility for health care delivery processes and use our broad knowledge outside operating room care and planning. In that sense, the COVID-19 pandemic should be a wake-up call. If we respond, we can stand on the shoulders of iconic anaesthesiologists like John Snow and Bjørn Ibsen who took on responsibilities outside the operating room during the cholera and polio pandemics²⁰

Authors' contributions

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Writing of the draft: WK MH JRS

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Declarations of interest

The authors declare that they have no conflict of interest.

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Figure legend

Figure 1. Publications per year, identified by PubMed search (20 July 2020), for: "Perioperative Medicine" (plain black line); "Enhanced Recovery After Surgery" (middle green line, squares) and "Perioperative Surgical Home" (lower blue line, circles).