

## In Response

Contributed to the operating room management components of 2 articles addressing infection control during the coronavirus disease 2019 (COVID-19) pandemic.<sup>1,2</sup> One article considered ambulatory surgery among patients who have undergone preoperative testing and obtained a COVID-19–negative result.<sup>2</sup> That article was fundamentally predicated on sufficient availability of personal protective equipment (PPE) for elective surgery to be done.<sup>2</sup> The other article considered essential and urgent surgery among patients without severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) testing.<sup>1</sup> That article was fundamentally predicated on the absence of sufficient available PPE. Quoting from the article: “Consider the assignment of anesthetic cases and staff (eg, anesthesiologists ...) to operating rooms ... under several conditions ... The patient is not known to have COVID-19 (eg, undergoing cesarean delivery) ... Shortages of PPE such as surgical masks and gowns are the principal constraint to elective surgery being performed ... A consequence of the second condition noted above (shortage of PPE) is that ... to reduce the use of surgical masks and to reduce potential COVID-19 exposure to the greatest extent possible, use relatively long (eg, 12 hours) shifts.” Thus, for the operating room management recommendations in Reference 1 to hold, the patient is not known or expected to have COVID-19, and there is insufficient PPE.

Van Zundert et al<sup>3</sup> state that 12-hour shifts “could negatively impact anesthesiologists’ neurobehavioral performance when caring for COVID-19 patients.” As quoted above, Reference 1 excluded the care of known COVID-19 patients. “Working in close proximity to infected or at-risk COVID-19 patients requires the use of PPE ... [Anesthesiologists] taking care of COVID-19 patients are required to wear even higher levels of PPE (ie, type 2 or 3) during aerosol-generating procedures.”<sup>3</sup> I agree, but these conditions presume such PPE are routinely available, contrary to the conditions I analyzed in Reference 1.

Van Zundert et al’s<sup>3</sup> conditions match those of a different study, Reference 4. Van Zundert et al<sup>3</sup> recommend “replacing the consecutive 12-hour shift per day with two 4-hour shifts interspersed with a 4-hour break period.” Those specifics are impractical

for surgery because most cases do not take precisely 4 hours. In Reference 4, we examined operating room management when there is enough PPE available for elective surgery and aerosol-generating procedures are being performed. We required a 90% probability that operating room staff, including anesthesiologists, would have their shift end within 12 hours.<sup>4</sup> The result was that the hours into which the cases were scheduled (ie, the allocated hours) ranged from 10.5 to 11.0 hours, depending on case scheduling and rescheduling processes.<sup>4</sup> There were functionally long breaks for the clinicians between cases because multimodal cleaning was done after each of the aerosol-generating procedures.<sup>1,2,4</sup> From Sections 2.2.1 and 2.2.2 and the second-to-last lines of Tables 2 and 3 of Reference 4, there would be, on average, 7.14 hours of anesthesia time per day. In addition, there would be initial patient recovery in the operating rooms, averaging an extra 1.36 hours of operating room time daily. Everyone in the room is not needed for patient recovery. If split between anesthesia providers and nurses,  $7.14 + 0.5 \times 1.36 = 7.8$  hours. That value matches Van Zundert et al’s<sup>3</sup> recommendation for 8 clinical hours during a 12-hour period, just not with a prespecified 4-hour gap, instead 2 long breaks as the room is being cleaned.<sup>4</sup>

**Franklin Dexter, MD, PhD, FASA**

Division of Management Consulting  
Department of Anesthesia  
University of Iowa  
Iowa City, Iowa  
franklin-dexter@uiowa.edu

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Conflicts of Interest: The Division of Management Consulting of the University of Iowa’s Department of Anesthesia provides consultations to hospitals. Dr Dexter receives no funds personally other than his salary and allowable expense reimbursements from the University of Iowa and has tenure with no incentive program. He and his family have no financial holdings in any company related to his work, other than indirectly through mutual funds for retirement. Income from the Division’s consulting work is used to fund Division research. A list of all the Division’s consults is available at [FranklinDexter.net/Contact\\_Info.htm](http://FranklinDexter.net/Contact_Info.htm).