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Get Vaccinated, or Get COVID-19

Steven L. Shafer, MD
Editor-in-Chief

Richard Simoneaux

Forget herd immunity. You have a binary choice: get vaccinated, or get COVID-19. It's not more complex than that. If you are fully vaccinated, you are unlikely to get COVID-19 and have almost no chance of dying. If you don't get vaccinated, COVID-19 will find you. When it does, you will have about a 1% chance of dying and about a 25% chance of long-term sequelae. You will also lend your body to the virus as a bioreactor for producing yet more infectious variants. Thanks a lot.

Introduction

With the emergence of new variants of SARS-CoV-2, another wave of COVID-19 is crossing the globe (asamonitor.pub/3ki9qb3). Driven by the Delta variant, new cases are surging in two of the most vaccinated countries in the world, Israel and the U.K. (asamonitor.pub/3hGdmR). See Figure 1. The Delta variant has been rising rapidly in the United States and now accounts for more than half of the new cases of COVID-19 (asamonitor.pub/3BfRTq7). See Figure 2.

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Improving Perioperative Brain Health: Turning Knowledge Into Action

Carol J. Peden, MB, ChB, MD, FRCA, FFICM, MPH
Daniel J. Cole, MD, FASA

Most anesthesiologists are aware of the ASA Perioperative Brain Health initiative (PBHI) (asamonitor.pub/2UcqKDd) and its goals to increase awareness of perioperative delirium and perioperative neurocognitive disorders (PND) and to promote action to reduce the incidence of these conditions. The number of papers pub-

lished on delirium and PND in scientific journals, as well as guidelines and systematic reviews, increases year on year. A recent important paper in JAMA Surgery drew attention to the economic impact of delirium and, consequently, made the business case for more investment and preventative action (JAMA Surg 2021;156:430-42). An accompanying

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Circle of Life or Hamster Wheel? The World of Obstetrical Anesthesia

Zachary Deutch, MD, FASA

Sharon C. Reale, MD

Hello readers, hopefully everyone enjoyed the summer and is looking forward to an academic year with a large degree of normalcy restored. Notably, most schools look to be reconvened 100% in-person, with minimal to no masking requirements and removal of plastic barriers. Can you imagine that, despite the anxiety, uncertainty, and disruptions related to the COVID pandemic, people still found the proper mindset to procreate? This is, of course, no surprise and is doubtless comforting to Dr. Sharon Reale, our Expert this month. Sharon is in the business of obstetric anesthesiology, and she counts on a steady flow of new babies to safeguard her livelihood, pandemic or no pandemic...

Welcome Sharon, can you describe your current position and responsibilities?

Thanks very much, Zach. I am an obstetric anesthesiologist at Brigham and Women's Hospital in Boston. Our labor and delivery unit performs approximately 7,000 deliveries a year, and we are a quaternary referral maternal care center. Currently, I am the director of resident education and the associate fellowship program director for the division of obstetric anesthesia. I become the fellowship program director in the fall. My research focuses on using large databases to study maternal morbidity and mortality.

Let's start with some nuts and bolts: what techniques do you favor for epidural/spinal anesthesia in terms of needles/equipment, dosing, and medications?

One of my favorite techniques for epidural analgesia is the dural puncture

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SPECIAL SECTION

A Wider and Brighter Anesthesiology Landscape

21-33

Guest Editor: Kumar G. Belani, MBBS, MS, FACA, FAAP, SAMBA-F

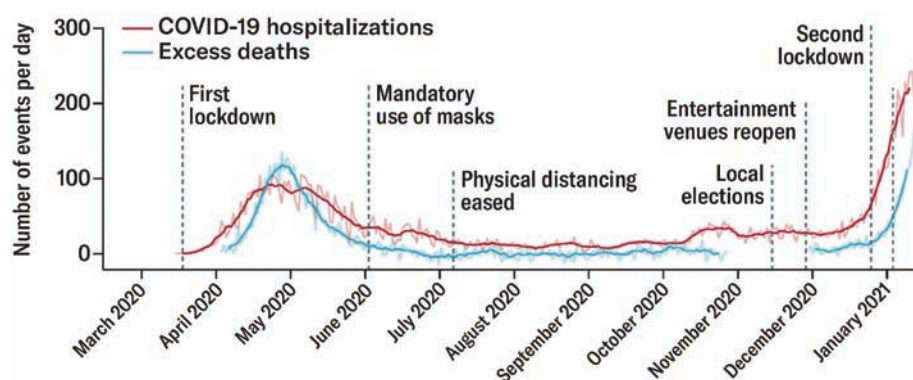


Figure 3: Based on approximately 75% attack rate and low levels of daily cases and deaths, it appeared the worst was over in Manaus, Brazil, last fall (ASA Monitor 2021;85:1,6-7). Restrictions were relaxed. In December, the appearance of the Gamma (“P1”) variant resulted in cases and deaths surging to rates not previously experienced, eventually forcing another lockdown. Adapted from ASA Monitor 2021;85:1,6-7.

unified implementation than hitherto observed.” Presciently, the authors voice concern that future spread in Europe

may “also involve the spread of variants that evade immune responses triggered by vaccines and previous infections.”

According to the most recent technical briefing published by Public Health England (PHE) on SARS-CoV-2, the Delta variant now accounts for nearly all cases of SARS-CoV-2 (asamonitor.pub/3iiKuh3). Between February 1, 2021, and June 21, 2021, the U.K. reported a total of 123,620 cases of confirmed Delta variant COVID-19, with 71,932 being unvaccinated and 14,359 having unknown vaccination status. This is similar to the experience reported in Belgium in late May 2021 (asamonitor.pub/3kqKhea). In the Nos Tayons assisted-living facility in Nivelles, Belgium, 119 of the 121 residents were fully vaccinated against SARS-CoV-2. Despite nearly 100% vaccination, 55 still developed COVID-19, of which 12 eventually died (asamonitor.pub/3kmwKEp). There were also 16

cases of COVID that were identified among the 107 staff (76% of whom were fully vaccinated).

The events that transpired at the Nos Tayons facility were consistent with the findings of a study that compared the immune responses of elderly patients and younger health care workers who received the BNT162b22 (Pfizer/BioNTech) vaccine (Nature June 2021). After the initial dose of vaccine, reduced neutralization potency against the Alpha, Beta, and Gamma variants relative to wild-type SARS-CoV-2 was noted in participants who were older than 80 years. After the second shot, however, neutralization was noted in all age groups.

Conclusion

The current consensus is that, provided both shots of the vaccine are given (unless the manufacturer only recommends a single shot), vaccines confer significant immunity against infection and exceptionally strong protection against death from the known variants (Science 2021;371:1103-4; Nature July 2021; Cell June 2021; J Travel Med July 2021; Lancet 2021;397:2461-2).

That’s excellent news. Although the variants have reduced vaccine efficacy, vaccines remain generally effective at reducing the probability of infection and hugely effective at reducing the possibility of death.

We can count on the virus evolving. As the virus increasingly seeks to infect those with pre-existing immunity, it will adopt new mutations that evade existing immunity. We can prevent this by vaccinating the world as quickly as possible. As succinctly stated by Altmann et al., “A virus that cannot transmit and infect others has no chance to mutate” (Science 2021;371:1103-4).

Get vaccinated, or get COVID-19. To paraphrase Albus Dumbledore, “It is our choices that show what we truly are” (Harry Potter and the Chamber of Secrets. 1998). ■

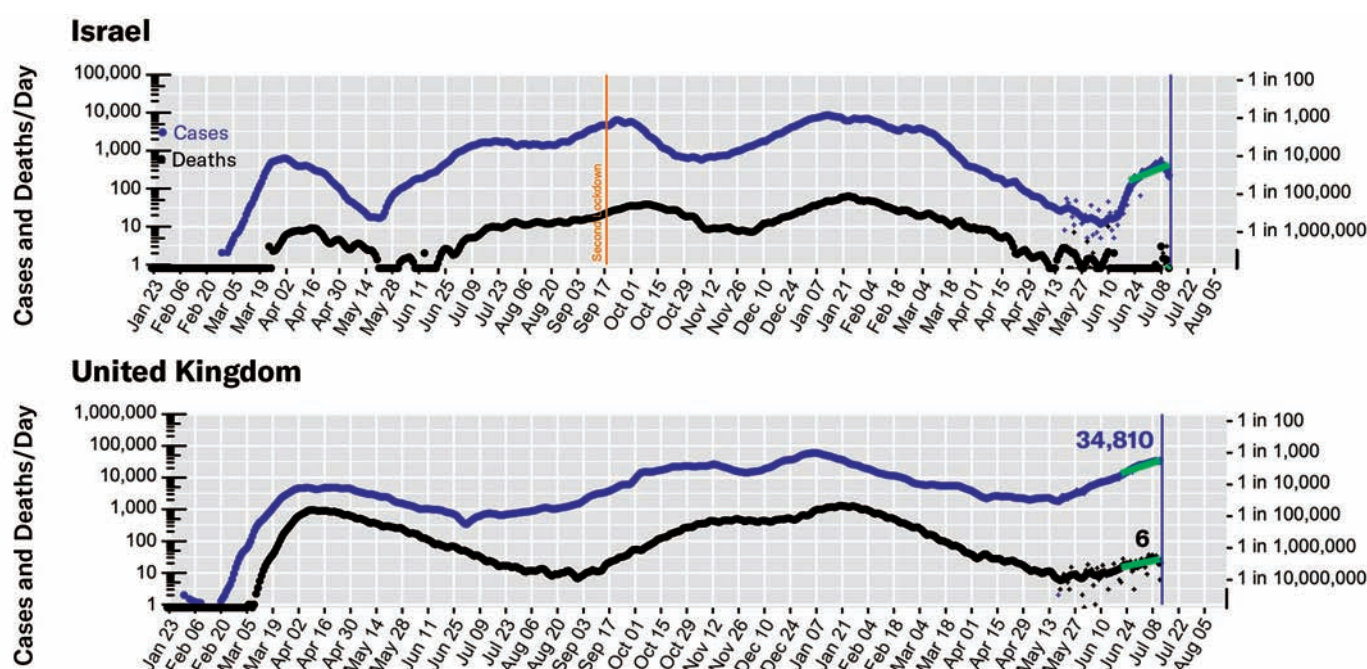


Figure 4: Time course for the COVID-19 cases and deaths in Peru. The surge observed in Iquitos was seen throughout the country (Science 2021;371:230-1). Peru has seen more than 194 thousand deaths, exceeding more than 0.6% of the population. The Gamma variant is partly responsible for Peru having the highest COVID-19 mortality in the world.

Your Patient’s Brain

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editorial stated, “postoperative delirium is the single most compelling case for our national surgical community to address, through initiating hospital-based quality improvement programs” (JAMA Surg 2021;156:470-1). The authors of the editorial went on to make the central points, also stressed by the PBHI, that delirium is the commonest postoperative complication in older surgical patients and is associated with poorer outcomes, including increased complications, loss of independence, readmissions, and mortality.

Note that the JAMA Surgery editorial did not call for more research, although that, of course, is always essential, but

instead for hospital-based quality improvement. In medicine, we know that despite guidelines and systematic reviews on best practice, there is a major gap between knowledge and action. The PBHI and the ASA Committee on Geriatric Anesthesia surveyed U.S. anesthesiologists and found that evidence-based actions for the prevention and detection of delirium were often not carried out; for example, formal postoperative screening for delirium in at-risk patients occurred routinely only about 20% of the time in academic medical centers and less than 10% of the time in all other types of practices (Perioper Med (Lond) 2020;9:6). While there is much more to be learned in the field of perioperative brain health, there are already estab-



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lished practical actions that can help reduce the incidence of delirium and PND, and yet those actions are not reliably carried out. Not all delirium is avoidable, but it is estimated that we can prevent 40% of cases. Moreover, early detection and mitigation are vital as studies show that the longer a patient remains delirious the greater the harm.

How then do we turn our knowledge into action? The first requirement is clear, evidence-based practices. Information is available in recent papers such as the “Best Practices for Postoperative Brain Health” from the International Perioperative Neurotoxicity Working Group (Anesth Analg 2018;127:1406-13), the American

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Ask the Expert: Obstetrical Anesthesia*Continued from page 1*

epidural (DPE), which involves making an intentional hole in the dura with a pencil-point 25 gauge spinal needle, after obtaining loss of resistance with the epidural needle, and before threading the epidural catheter. I find the DPE particularly useful in patients in whom neuraxial placement may be difficult, including those with obesity, those with spinal abnormalities (such as scoliosis), or those with a history of patchy/poorly

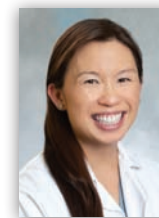
functioning epidural. Though there has been some conflicting evidence published recently, the majority of studies show that the DPE confers a faster onset time, better sacral coverage, and less one-sided blockade when compared to the traditional epidural technique. I typically bolus my epidurals with low-dose bupivacaine (0.0625%) and utilize programmed intermittent epidural boluses (PIEB) in my pump settings. The lower-dose bupivacaine concentrations help to decrease the risk of motor block, while the PIEB settings help optimize analgesia via in-

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creased spread of local anesthetics within the epidural space.

For spinal anesthesia for cesarean delivery, I typically use 12 mg 0.75% hyperbaric bupivacaine with 15 mcg of intrathecal fentanyl and 100 mcg of morphine. For those

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in whom the operative time is expected to be longer than normal, I will often perform a combined spinal-epidural (CSE). For example, I use a CSE in patients with a history of multiple prior cesarean deliveries

*Continued on next page***Your Patient's Brain***Continued from previous page*

Society for Enhanced Recovery and Perioperative Quality Initiative Joint Consensus Statement on Postoperative Delirium Prevention (*Anesth Analg* 2020;130:1572-90), and an expert consensus review from an ASA perioperative brain health expert panel (*Br J Anaesth* 2021;126:423-32). The latter paper, published in *The BJA* in January 2021, takes a pragmatic approach, distilling key actions not from a review of the scientific literature, but from existing published guidelines. The expert panel reached consensus on a small number of actions based not only on the strength of the evidence but also on potential impact and feasibility for widespread implementation. The six actions were:

- Education and training for the multidisciplinary care team on detection and prevention of delirium and PND
- Routine, simple preoperative cognitive screening to detect at-risk patients
- Delirium screening
- Nonpharmacologic interventions such as return of hearing aids and promoting the presence of family
- Optimal pain control
- Avoidance of antipsychotics and anxiolytics unless absolutely necessary.

Anesthesiologists are well placed to act as key members of the multidisciplinary perioperative team to partner and lead with surgeons on joint quality improvement initiatives. The goal of such initiatives should be to ensure that processes of care to improve perioperative brain health become part of routine management for all older surgical patients.

A key component of any quality improvement initiative is understanding the problem. One of the first things hospital teams can do is to measure both the incidence of preoperative cognitive impairment and the incidence of postoperative delirium and PND (*Br J Anaesth* 2016;117:145-8). Administrative data captures delirium poorly, and incidence tends to go up during research projects where teams are proac-

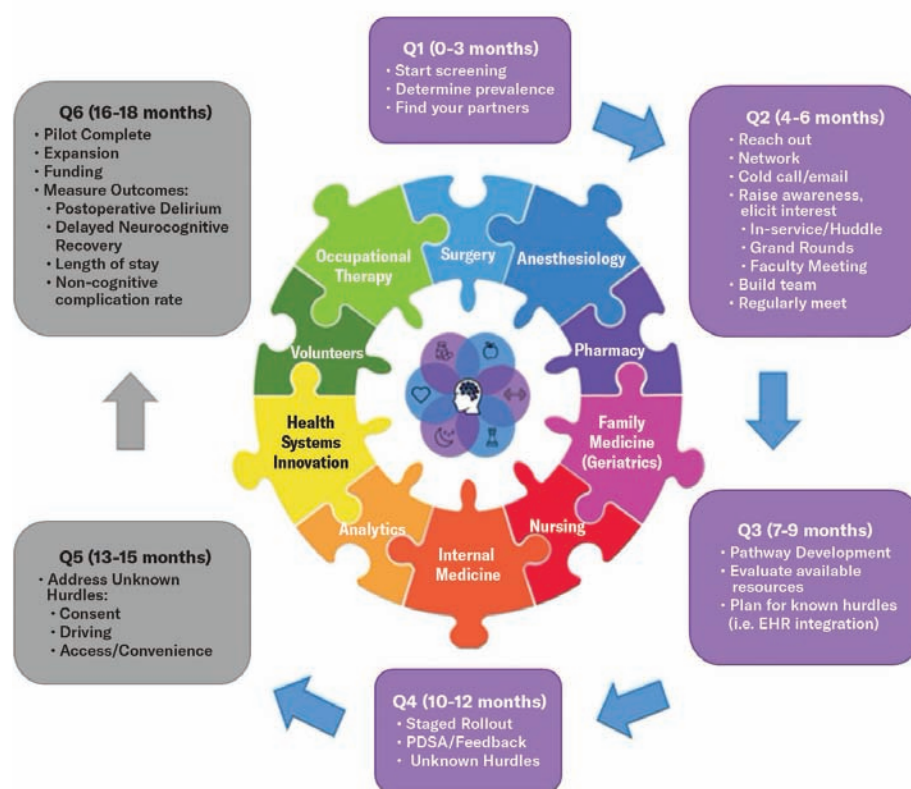


Figure: Steps and timeline in the development of a multidisciplinary perioperative care pathway. The team was designed with the older surgical patient at its center.

Reproduced with permission from Decker et al. Beyond Cognitive Screening: Establishing an Interprofessional Perioperative Brain Health Initiative. *J Am Geriatr Soc*. 2020 Oct;68(10):2359-64. (EHR=electronic health record; PDSA=plan do study act)

tively and carefully screening patients on a regular basis. Record review using surrogate markers such as use of antipsychotics may help identify cases that might otherwise be missed. Having an idea of the baseline extent of the problem provides a platform on which to launch an improvement program. For example, establishing our preoperative cognitive screening program at Keck Medicine of USC in Los Angeles allowed us to demonstrate that about 25% of our surgical inpatients over 65 years showed some degree of cognitive impairment with Mini-Cog testing (*J Am Geriatr Soc* 2020;68:2359-64). This data stimulated conversation with the wider perioperative team, including not only surgeons but also nurses, pharmacists, geriatricians, therapists, and the IT team, to build a pathway to detect at-risk patients, communicate that risk, take actions such as

reducing benzodiazepine prescription, and create alerts within the EHR to flag patients who require close observation (Figure). With a true QI approach, each step of the pathway requires testing and refining before final implementation. Programs such as the Hospital Elder Life Program (HELP) developed by Sharon Inouye at Harvard have shown that simple, practical actions can reduce the incidence of delirium, and when applied to surgical patients, modified HELP programs have not only reduced delirium but also the incidence of other complications and length of stay and promoted a faster return to normal activities of daily living (*N Engl J Med* 1999;340:669-76; *JAMA Intern Med* 2020;180:17-25).

Anesthesiologists have rightly focused on whether the type of anesthetic given or the use of intraoperative processed EEG

monitoring can reduce the incidence of delirium and PND. However, at present there are no clear answers, and these topics remain the subjects of ongoing research. In contrast, there are simple steps in the perioperative pathway (some of which have been highlighted above) and others, such as avoidance of drugs on the Beers criteria list, that have established evidence behind them (*Anesth Analg* 2018;127:1406-13; *Anesth Analg* 2020;130:1572-90; *Br J Anaesth* 2021;126:423-32). In addition, there is growing evidence that frailty and delirium are closely linked, and screening for frailty and delirium should become a routine part of preoperative assessment (*Anesthesiology* 2020;133:1164-6). A frailty screening kit designed by members of the ASA Committee of Geriatric Anesthesia will be available soon on the ASA website. There are national QI initiatives such as the Age-Friendly Health Systems Initiative, which aims to improve care for hospitalized older people, and improvement work on perioperative delirium and PND fits well into the mentation and medication pillars of this initiative (asamonitor.pub/3qDrnls). Involving patients and families in the design of a perioperative brain health pathway is also likely to increase success, as ideas can be tested and feedback elicited from the individuals who have the most to gain from improvement, and the most to lose from an episode of delirium or PND.

Despite multiple best practice guidelines, systematic reviews, and recent summaries of key actions, simple, evidence-based steps that can help reduce the incidence of delirium and PND are not always taken. Anesthesiologists as key members of the multidisciplinary perioperative team are well placed to lead, or partner with surgical colleagues, on quality improvement programs to reduce delirium and PND. Through implementation of evidence-based perioperative care pathways to protect the brain health of older surgical patients, we can turn knowledge into action. ■

Disclosure: Dr. Peden is an advisory board member and shareholder of Somnus Scientific.