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**Anesthesiologists™**

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VOICE OVER:

Welcome to ASA's Central Line, the official podcast series of the American Society of Anesthesiologists, edited by Dr. Adam Striker.

DR. ADAM STRIKER (HOST):

Welcome back to Central Line. I'm Adam Striker, your host and editor. And today I'm welcoming a returned guest, Dr. Steve Shafer, The Monitor's editor in chief. Steve, you and I spoke to you about a year ago about the state of the nation and specifically the state of the pandemic. And I'm pleased you've returned for follow up conversation. So welcome back to the show.

DR. STEVE SHAFER:

Hey, Adam, it's great to be back. And happy New Year to you and happy New Year to everybody else as well. It's always a pleasure to be here.

DR. STRIKER:

Happy New Year to you! Now, a year ago, you made some predictions about what 2021 would look like. Can you remind us what you expected to happen and tell us how your expectations played out?

DR. SHAFER:

Oh, Adam, this is always the dangerous question to answer, but it is the nature of science. If you make a prediction, you're kind of obliged to go back and say, "Did I get it right or did I not get it right?" So I made a couple of predictions in the January issue of 2020 about what 2021 one would bring as far as the COVID pandemic was concerned. My first statement was that vaccination would bring the pandemic to an end. Well, I guess we know how that turned out. That did not happen. And I think it's worth pausing a moment to say why that didn't happen. First off, it didn't happen because we didn't

vaccinate all that aggressively. It was slow to roll out the vaccinations in the first quarter of 2020. There were ... we just didn't have the supply of vaccines. And then as the vaccines rolled out, what we found was that by second quarter we had about the right number of vaccines, but they still weren't approved for younger and younger age groups. By the third quarter, we finally now they're approved, and I think it's children above the age of five. But that was a very, very slow rollout and the unvaccinated fraction of the population continued getting the disease. So vaccines just didn't roll out as quickly.

The other thing that certainly I didn't anticipate at all, was the amount of vaccine obstinacy that we would see in the population. Large swaths of the U.S. population and this has been repeated in other countries as well, simply refused to get vaccinated. A huge amount of vaccine misinformation proliferated in social media and other forms,. And that delayed the ability of us to bring this pandemic under control.

The other thing is, quite frankly, I didn't understand what vaccine efficacy meant, and I think many of our listeners probably did not understand it, either. A year ago, the vaccines, for example, the mRNA vaccines from Pfizer and Moderna were touted as being ninety five percent effective. That's what the clinical trials unambiguously demonstrated. What wasn't clear to me at the time was that efficacy is a function of something that's not reported. And what that is, is the actual exposure rate to the virus. So as I mentioned, as I sort of worked this out in my own mind in one of the editorials in the ASA Monitor last year, let's say that you were in one of the vaccine trials, but every 10 seconds after you got the vaccine, somebody injected SARS-CoV into your nostrils. Well, it pretty much guaranteed to get SARS-CoV, whether or not you got the vaccine because you're being exposed every few seconds to another shot of SARS-CoV and one of those doses is going to get you infected. So I didn't realize that. I thought ninety five percent was ninety five percent, but ninety five percent is a function actually of the exposure rate, and we didn't appreciate that until Delta came along. Delta was so infectious that the exposure rate went way up, and with the exposure rate going up, vaccine efficacy dropped as it would be expected to. And so we now understand more about what vaccine efficacy actually means when it comes to infection and severe disease. So as a result of those things, vaccination did not bring SARS-CoV to an end.

On the other hand, other predictions that were made at the time actually proved relatively accurate. At the time, we predicted that SARS-CoV-2 would surge in winter months. Similar to influenza and then happened. I said a year ago that SARS-CoV-2 would become endemic. And if you read both the scientific papers and the popular press now, that's the conclusion SARS-CoV-2 is now an endemic coronavirus. There had been four and coronaviruses. Now there are five, with SARS-CoV being the fifth. One year ago, I predicted that doesn't take a lot of prediction to say this, that new

variants would emerge, and that's certainly happened. Delta was the big one last year, and the one that's currently taking off in the United States and worldwide is Omicron. Somewhat controversial a year ago, I said herd immunity just wasn't going to happen. It wasn't really in the cards. This is based upon a number of scientific studies of it, including waning immunity, which was documented for SARS-CoV and the fact that the endemic coronaviruses people get them every couple of years anyway and they have their entire lives. So we know that reinfections are common after several years. So in fact, that people now say yes, forget herd immunity. The poster child for that is the United Kingdom. Ninety nine percent of the adult population of the U.K. has antibodies to SARS-CoV, and yet we still see people getting infections and we see people dying. People who are dying are not healthy people who are vaccinated, but rather if you're vaccinated, it's because you are immunocompromised or have other severe risk factors or you simply didn't get vaccinated, which is responsible for most of the deaths that we still have seen prior to Omicron in the U.K., despite ninety nine percent seropositivity.

So we predicted a year ago that people would continue getting sick from SARS-CoV, but both immunity and improved therapeutics would be changing the outcome, and that happened. The monoclonal antibodies are now widely deployed and they're changing outcomes. And this coming year, we have two drugs again. It's frustrating that it takes so long to go through the scientific or approval process, but there really is no Plan B. I mean, that has to be done to actually have effective therapeutics reach patients. But we have two therapeutics that are finally going to reach patients this coming year. One is the drug from Merck. The name is Molnupiravir – M O L N U P I R A V I R. Molnupiravir from Merck. That proves to be about 30 percent effective against severe disease. And the other drug is Paxlovid from Pfizer Paxil. It is clearly the most exciting of the two. It's about 90 percent effective in preventing symptomatic disease. And in the study that was just published in the New England Journal of Medicine, not a single patient died who had received Paxlovid. So it seems to be extremely effective against severe disease and mortality. So the new therapeutics did come on board a little slower than hoped for, as was predicted a year ago.

DR. STRIKER:

Ok, well, that certainly is a lot to take in with both good and bad news peppered in that response. It does lead me to the January issue of the monitor, which is titled The New Normal. Now that phrase gets tossed around a lot. What the new normal will look like. We're probably already there or we're evolving. I'm wondering if you believe the current state of the pandemic is the new normal or how you think this will all evolve. What are your expectations for 2022 and what do you think? Ultimately, this is going to look like for the country?

DR. SHAFER:

Adam, great question. So last year's crystal ball was pretty good, except that I was overly optimistic about the ability of vaccines to bring the pandemic to an end because I did not anticipate vaccine resistance, nor did I anticipate the slow approval process. However, I am pretty confident in saying that we are now looking at the new normal. So what are we looking at today? We're looking at a new variant, Omicron. Omicron has demonstrated tremendously high levels of immune escape. We anticipated that the virus would evolve towards higher levels of immune escape. If you look at the I believe it is in the June issue of the *Assay Monitor*, I discuss an article published in *Scientific Reports*, which very clearly says if you don't vaccinate everybody quickly and people abandon non-pharmaceutical interventions like masking and social distancing towards the end of the vaccination campaign, you will selectively see strong evolution towards immune escape. And that's exactly what happened with Omicron very strong selection for towards immune escape. And at this point in time, Omicron is very happy to infect you unless you have high levels of antibody and high levels of antibody now means actually three doses of the mRNA vaccines. Two doses are not enough. With Omicron, you need that third booster. And with that, there is about 70 or so percent protection against actually getting infected with SARS-CoV.

What we do know, also is part of the new normal, is that if you do have antibodies, you are protected against severe disease unless you are immunocompromised. That was asserted as a possibility last year. We saw that all last year and now the initial data from Omicron shows that to still be true, that vaccination and some level of immune response to SARS-CoV is protected, and the more antibodies you have, the better off you are. So even if you're doubly vaccinated, it's time to get your booster.

Other aspects of the new normal part of the new normal, I think, is a increasing acceptance of non-pharmaceutical interventions. I spent a fair chunk of December in Hawaii, and Hawaii has been very strict about maintaining masking, maintaining social distancing, having to demonstrate vaccination or a negative SARS-CoV-2 test just in order to get into Hawaii in the first place. And as a result, Hawaii has the lowest incidence of cases and deaths in the United States, and their economy has recovered exceptionally well because of the care that they've taken. I think we'll see in 2022 increasing acceptance of masks, social distancing and people taking these interventions, recognizing that there is still a role for these despite vaccination and despite the strong desires of everybody to try to get life back to normal. Frankly, as we know in anesthesia, wearing a mask is just not that big a deal. As mentioned, we have the new viral treatments I thought they would come on board last year. They're really the two oral ones are coming on board this year. I think they'll make a huge difference.

And lastly, I point to England. Part of the new normal can be figured out from looking at what's going on in England. They have high rates of infection, but that's mostly in kids because that's the last group to get vaccinated. And they have higher rates of deaths. And who's dying? The unvaccinated and the immunocompromised and what's going on in England, right, frankly, is that grandparents are dying from disease that they're getting from their children, from or from their grandchildren. That's part of the new normal. The other thing that happened in England is their vaccine, quite frankly, was not as good as ours as they had, primarily the AstraZeneca vaccine, which is not as effective as the mRNA vaccines they are switching over to the mRNA vaccines.

DR. STRIKER:

Well, it seems like one more aspect of the new normal is the return to elective surgery. Now there's a couple of considerations for anesthesiologists. One is that we're all juggling a host of considerations that we have consensus around, things like low infection rates before resuming surgeries or how to test and isolate patients more on the global scale, the macro scale, the public health scale, if you will. We also have to grapple with the fact that many of the patients individually undergoing surgery have had COVID. Because the resolution of COVID symptoms is so variable. I'm wondering if there's some consensus around anesthetic implications of elective surgery in COVID recovered patients?

DR. SHAFER:

Hey, Adam, that's that's a really important question. We know certainly in 2019 and also last year that there were very real consequences for patients who had delayed surgeries. There was a paper that was published, I believe it was in the British Medical Journal, which looked at the stage of colon cancer in patients who are presenting for surgery, and there was simply more advanced last year. Why? Because their surgery had been delayed. Well, that's obviously a very bad thing to be doing. And so the question about how do we try to address the surgical needs of patients in this time? It's an important question with a lot of implications in terms of delivering optimal care for our patients. So there are a lot of implications for how we look at elective surgery in these patients.

For starters, we're not going to be doing elective surgery in people who have COVID. If someone actively has COVID, you know, they're not going to get surgery. But I think what we will start to see is much more careful testing for active COVID. And what that means is strand specific RNA testing. So in general, what people have tested for is the positive strand RNA because that's what COVID is. Covid is a positive strand RNA,

which refers to whether or not the strand matches the amino acid sequence, or its complement matches the amino acid sequence.

It's important to understand how SARS-CoV replicates. When it's being a positive strand RNA, it is the direct messenger from which the amino acid sequence is assembled by the cell. So the cell sees the RNA that is injected as part of the infection, and it copies that into the series of proteins that are required to make the virus particles that will then be expelled when the cell bursts. However, it also, of course, has to copy the RNA. And to do that at first makes a template of itself, which is the negative strand. And that negative strand is then copied into many, many, many, many positive strands, which become the nucleic acids for SARS-CoV-2. In order to test for SARS-CoV-2, if you test for the positive strand, you're going to pick up a lot of just detritus that's left over in your nose and your oropharynx and your bronchial tree from infection. Because there's a lot of the positive strands sitting around, which are just fragments and they're not infectious. To know if someone has active infection, you really need to test for that negative strand. And this is something which has not been done, except at a few institutions. We do it at Stanford because that's where this was developed. But by testing for the negative strand, you know if someone actually has infection. So I think what we'll start to see routinely, is people moving away from a certain number of days following infection to instead very specific and very sensitive tests for negative strand RNA. If the negative strand RNA is negative, in other words, you don't have any, then it'll be okay to proceed with surgery because they don't have infectious disease. However, if it hasn't gone negative, then elective cases will certainly be delayed until the person has cleared their body of actively replicating SARS-CoV-2.

DR. STRIKER: I want to ask you about another aspect of the new normal. As you mentioned, some of the non-pharmaceutical interventions, such as wearing masks and social distancing, are tapering off in some places. This means infections such as influenza, which were low last year, will rebound. So we'll be dealing with co-infections patients who have COVID and the flu, for instance. What do we know about co-infections? Is this a possibility that worries you? How do we prepare to manage this, et cetera?

DR. SHAFER:

That's an excellent, excellent question, Adam. And it's something which I think Omicron is giving particular impetus to right now. There is very little data on co-infections, but the data that does exist, and it's mentioned on reference in the article, suggests that co-infections with influenza and SARS-CoV do occur and they have about a 10 percent mortality. That's a really, really dangerously high level of mortality, obviously. So with Omicron surging right as influenza is surging, we will see many cases of co-infection.

And how does one prevent and bring down this 10 percent mortality? Well, in animal models, and it's all we have so far is animal models. If you get your flu shot, you decrease the mortality of co-infection with influenza and SARS-CoV-2. Interestingly, having the COVID vaccine has less of a benefit in terms of decreasing mortality as getting the influenza vaccine. So the obvious thing is get your flu shot, which I assume for most people who are listening to this, they get a flu shot every year. It's just part of their employment agreement with their health care employer, and also get your COVID vaccines and in particular, your COVID boosters. And that should be the way to protect ourselves. How do you protect your patients? I think more than ever this year get flu shots.

DR. STRIKER:

Well, thanks for that important reminder. Let's shift to another important topic here burnout. How do you think our specialty and for that matter, anesthesiologists as individuals, broadly speaking, are doing after dealing with COVID and pandemic fallout for the past two years? You know, we're a resilient group, but burnout is real. It's too real. And one of the unique challenges health care workers face during COVID was that it often took away strategies we use to fight burnout like isolation, for example. I'm wondering how you view the status of our specialty two years into this. How are we doing? I know burnout is it's a big issue for physicians across the board. Let's focus in a little bit on how you think anesthesiology is doing.

DR. SHAFER:

Uh, great question, and I can answer just from what I see, as well as from what's been documented in the literature. But first off, we're hurting. This has been a tough two years for us. We have felt burdened by COVID. First off, as the general population has, we've been concerned about our health. We've been concerned about the health of our families, the health of our friends, the health of our colleagues. And that's something that I think everybody has felt.

But of course, we also feel burdened by our role in helping to educate the public about COVID. And I think many of us look at the misinformation that has been promulgated, in some part by physicians, with a real sense of guilt that we have not been more effective at bringing the science to our patients. The science is not ambiguous. Masks work. Social distancing works. Avoiding indoor crowds works. This is well documented and is not ambiguous. The science on vaccines works. And yet I get occasional not often, but occasional emails from my anesthesiology colleagues claiming that vaccines are ineffective. I look at this and I just say, how have I failed to educate my colleagues and to use my position as an anesthesiologist to help spread scientifically-grounded facts,

which can help us fight this? And instead, I see people, including some in our profession, doing things, which in fact are helping the pandemic last as long as possible and are not helping our patients avoid the illness and personal loss--loss to their families, risk of long COVID, which we should be making every effort to guide our patients properly.

DR. STRIKER:

Ok, well, let's talk about the challenges of grappling with the fallout from the pandemic means for the future of the specialty. Covid has affected the workforce in ways that will impact the specialty for years to come. Older physicians have retired, prolonging residency training for younger physicians. How do you think this pandemic will impact the workforce in the coming decades?

DR. SHAFER:

Um, I think the best predictor of the future is the past. Let's just look over the last two years. People are retiring early from medicine. That concerns me some. However, I'm even more concerned by retirement in other health care providers, who are essential to the delivery of modern medicine. Nurses are retiring. Physician assistants are retiring. Health care aides are retiring. Home health care aides are leaving the specialty. A lot of people are simply leaving health care. And it's not just physicians. When others leave, the burden increases on those who remain. And I am concerned that the exodus of health care workers at all levels, not just physicians but at all levels, is going to make life more difficult for those of us who remain.

As life becomes more difficult for physicians, then think about the decision process for those who are currently in training or those who are thinking about a career in medicine. They look at the exodus. They look at how physicians went from being heroes in March and April of 2019 to often being cursed and accused of all sorts of horrible things right now, because COVID is still here and people are tired of it and people want ... scapegoats and physicians and other health care providers make an easy target. So it's going to take time, I think, for people to look again at medicine as a desirable field. And if that decreases the attraction of medicine for our best and brightest, then that's going to hurt us for decades to come. It's going to be a fairly long time digging out of this because medicine in some ways has been transformed from something that we all just absolutely loved in 2019 to something that carries a stronger psychological weight with it today.

DR. STRIKER:

Well, that's an important thought. Indeed, many of the topics and points we've touched on here are fleshed out more fully in that January issue of the monitor. Are there any other items you want to flag for our readers? Your editorial in the issue is called The New Normal. So why don't you tell us a little bit about that?

DR. SHAFER:

Well, the editorial in the January issue, it talks about things that we've talked about here, I talk about the advances in therapeutics. I talk about long COVID. I talk about burnout. And I want to just mention that I think we need to look towards the guidance of some people who have been thinking about pandemics and thinking about the consequences for decades. For example, I reference work by Dr. William Haseltine. He is the founder of two separate departments at Harvard University, one of the most respected scientists in the United States. And my editorial was very much influenced by his comments, where he talks about the road ahead for 2022 and the following years in terms of bringing this pandemic, now two years of pandemic, to an end. And I encourage people to look at some of these big thinkers, like William Haseltine, and by the way, his article you can find at the Brookings Institute, who can give us some good guidance on where we've been, what to expect and where we're going. And that guidance is reflected in what I chose to write about in the January issue of the ASA Monitor.

DR. STRIKER:

Thank you so much for that insight. I've enjoyed covering articles and themes from the monitor on her podcast this past year, 2021. We've done inside the monitor episodes, touching on a host of issues anesthesia in low- and middle-income countries, palliative care, sustainability leadership, global health, even the future and where the specialty is headed. In 2022 we're going to team up once a month to address the issues that shape our specialty and certainly issues that our specialty is shaping. We're going to cover key topics in this new year, but how do you, as editor-in-chief, decide what to cover and when?

DR. SHAFER:

Thanks, Adam. Good question. Well, my touchstone for the ASA Monitor is the same as my touchstone for the ten years I was editor in chief of Anesthesia and Analgesia. And that is, patients come first. What we publish in the ASA Monitor first and foremost prioritizes the well-being of our patients, and oftentimes that aligns with what we as anesthesiologists value in our own professions and our own lives. But we are really here for the patients, and every editorial decision is based primarily or at least as the primary consideration of what is in the best interest of patients. However, we are an ASA

publication. We're not a peer reviewed publication, so I need to be sensitive to the concerns of the ASA as well. But there is no daylight between my position and the ASA position, because their position is also patients come first. So the Monitor is less the perspective of one or two authors, as you might find in a peer reviewed publication, and instead reflects the science. My editorial in the January 2020 issue might have been here's my vision, my personal point of view, but we've been more science driven, including there. You know, there was references broadly to the science. My guess is you'll find more references to Science Nature, the New England Journal of Medicine in The Lancet in one issue of the ASA Monitor than you will in an entire year's worth of papers in our standard peer reviewed journals because we are talking about and trying to bring science to our readers. But we're a news magazine. And so whether we're reporting on science or whether reporting on affairs of the ASA, we're trying to be top notch in how we approach that.

So two things about 2022 One is, I really looking forward to not talking about COVID anymore? I have had about 20 articles and in the no columns and things about this, about COVID. And gosh, I hope that once the Omicron wave goes through, whether people like it or not, they will have immunity by virtue of Omicron. And by the end of this coming year, it will no longer be a pandemic that affects our daily lives the way it does today. So I'm looking forward to this next year to not talking about Omicron.

And the other thing which I've learned in the last year, and I hope to bring to this next year, is gratitude. I have an enormous amount of gratitude for what science has brought us during this pandemic. Unbelievable science has brought us vaccines in less than a year. Previously, it took more than a decade to develop a new vaccine. Unbelievable therapeutics have emerged. We understand more about the evolution of viruses than we've ever understood before. The informatics that have been brought to bear on COVID. I am very grateful for all of this and my sense of gratitude that has built up over 2021 for the science, for the people working to bring the science together and for the efforts of ASA and anesthesiologist around the world to care for their patients during the pandemic and to my health care colleagues. I just ... gratitude is what I felt this year. And so next year, our December issue is going to be on gratitude. This December's issue is on burnout. That's kind of a bummer, but it's very real. So we're going from our December 2021 issue, which was about burnout, to our December 2022 issue, which will be about gratitude. And really, it's my hope that at that point in time, we can be grateful that the pandemic has come and passed. We will be grateful that we all survived. And we will be grateful for the advances that allowed us to get through the pandemic with far less loss of life and patient morbidity than we would have had were it not for the advances in science that are at our disposal.

DR. STRIKER:

Well, we can all benefit from more gratitude. It's well said, I look forward to hearing more about that later this year. Let's hope your prediction about the pandemic winding up is correct. Well, Steve, it was a pleasure having you back on the show.

DR. SHAFER:

Adam, thanks so much. Always a pleasure to be on the show.

(SOUNDBITE OF MUSIC)

DR. STRIKER:

Thanks for sharing this sneak peek at this month's Monitor and some of the key findings you're tracking and covering. Listeners can read more about COVID and or share new normal at [asamonitor.org](http://asamonitor.org). The issue is available online now, and don't forget to subscribe to Central Line. Please join us again soon. Thanks everyone for listening.

VOICE OVER:

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