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RUSH

Surgical Training During a Pandemic

A roundtable discussion about how the COVID-19 pandemic affected orthopedic education at Rush and beyond

As academic medical centers around the country prepared for a surge in patients with COVID-19 during the early weeks of the pandemic, residency and fellowship programs had to demonstrate an unprecedented level of flexibility. At Rush University Medical Center, leaders were challenged to continue providing high-quality orthopedic education in an uncertain environment.

In this roundtable, *Rush Orthopedics Journal* sat down with three orthopedic leaders at Rush to discuss how they remained agile and optimized trainees' learning opportunities. Panelists include Craig J. Della Valle, MD, chief of the Section of Adult Reconstruction; Monica Kogan, MD, residency director for the Department of Orthopedic Surgery and lead author of an article in the *Journal of the American Academy of Orthopaedic Surgeons* on orthopedic education during the COVID-19 pandemic; and Nikhil Verma, MD, director of the Division of Sports Medicine and director of the Sports Medicine Fellowship Program.

During the roundtable discussion, several themes emerged. As the panelists explain here, they believe that online learning is here to stay and praise residents and fellows for their ability to remain nimble. They also express a sense of gratitude, recognizing that the disruption gave them a deeper understanding of the privilege they have to care for patients and train the next generation of orthopedic surgeons.

To what extent was orthopedic education at Rush affected by the pandemic?

VERMA: In March 2020, as things began to rapidly shut down, we were concerned about the longevity of the shutdown and how it would affect our clinical volume and our ability to care for patients.

We also were concerned about our trainees. Most of our fellows and residents learn directly working alongside us in actual patient care, whether that's in the clinic, ER, or OR. Any prolonged shutdown would have had a significant impact on our ability to make sure they were adequately trained upon their departure from us. But in the end, the shutdown didn't last long, and I don't think orthopedic education was affected significantly.

DELLA VALLE: It definitely could have been a lot worse. Fortunately, Rush was very prepared, and that allowed us to resume clinical activities that provide training opportunities as quickly as possible.

KOGAN: I agree. Thankfully, once the shutdown was over, the residents were able to get back to treating patients and back to the OR and clinics to resume their training. I know that there were concerns about the impact on their training, but the residents took the initiative to continue their education on their own even though it was in a different format than what they were used to.

VERMA: As soon as we became operational again, which was probably in about five to six weeks, we were able to integrate the residents and fellows almost immediately back into care. And as a result, we were able to minimize the impact.

How did you move some of the education to a virtual learning format?

DELLA VALLE: We definitely took advantage of new opportunities for virtual learning. For example, the American Association of Hip and Knee Surgeons had nationwide virtual conferences, which we were able to incorporate into resident and fellow education. We also had virtual webinars on a weekly basis.

So, while some doors were shut, others opened up. People were creative and found ways to make the best of the situation.

VERMA: I agree. One of the good things that came about from COVID-19 was the fact that many of our didactic sessions moved to an online format.

A number of associations helped to pilot educational courses, such as the Arthroscopy Association of North America and the American Orthopaedic Society for Sports Medicine. Some of the standalone platforms like SportsMed Innovate and VuMedi also began having routine webinars.

Because none of us were traveling to meetings and the clinical volumes were significantly reduced, we could access national and international experts to participate in collaborative educational events, which would have been much harder to do in a nonpandemic situation.

DELLA VALLE: Right. We all looked for opportunities to share knowledge. It wasn't uncommon for us to say, "Hey, let's do a virtual conference together."

KOGAN: Virtual platforms have allowed residents to have mandatory weekly, service-specific conferences. We also required residents to complete 100 online questions specific for orthopedic surgery residents by ResStudy in their subject matter each week. We wanted to maintain their knowledge base even if they weren't in the hospital seeing patients or in the operating room.

We also considered whether we would need to assign time for residents with a surgical simulator, but in the end, that wasn't necessary.

Beyond having to move education online, what were some of the other issues you encountered?

KOGAN: A big issue was the lack of connectedness with one another. Residents really missed it.

DELLA VALLE: That's true. People genuinely missed being together and sharing ideas.

KOGAN: We did what we could to address this. To maintain a sense of connectedness, we'd have socials and online happy hours with different themes. And when we were having a conference, cameras had to be on — not just to hold residents accountable, but also so they could see one another and be connected.

Did any of the orthopedics residents provide back up in the ICU or the ER during the surge?

KOGAN: We placed residents' names on a list in case we needed their help. Thankfully, we only had two residents providing back up in a low-level emergency triage area that was open for only two weeks, as well as four residents who helped in the ICU for one week each.

"It definitely could have been a lot worse. Fortunately, Rush was very prepared, and that allowed us to resume clinical activities that provide training opportunities as quickly as possible."

Craig J. Della Valle, MD, and Monica Kogan, MD

We were very fortunate at the hospital because we had PPE and processes in place to keep everybody safe. Only in rare cases did the residents actually have to go inside the patients' rooms.

How were residents affected mentally during the early weeks of the pandemic?

KOGAN: They all built resilience in some way from this because they had to study in a way that they were not accustomed to or were put in roles that they weren't used to. On top of that, one of the biggest challenges was not being able to see each other. Residents get a lot of support from each other, and not being able to go out and see each other socially was a big challenge.

Despite these challenges, they stepped up and did their jobs with integrity and excellence. I couldn't be prouder of our orthopedics residents.

How were fellows affected during this time?

VERMA: Initially, they aimed to work collaboratively to provide care for patients with COVID-19 if needed. But once things stabilized in Chicago and it became clear that we wouldn't see a huge surge of cases, their focus shifted. They were still involved in emergency cases and participating in the clinics with us once a week.

DELLA VALLE: I would say that because the fellows are only here for a year, as opposed to residents who are with us for five years, they were probably more affected than the residents.

KOGAN: I agree with that. The lower volumes of work during those initial months affected the fellows the most.

DELLA VALLE: For two months, we had no volume, and then for three or four months, we had half our usual volume. The fellows are here for a condensed experience, and they missed out on a big part of that, unfortunately.

VERMA: That's true, but we did make some minor adjustments to the rotation schedule to make sure that fellows were able to complete their rotations, even in an abbreviated fashion. That's important because we have some specialty rotations where they may do hip surgery with Dr Shane Nho or shoulder surgery with Dr Gregory Nicholson, for example. With the adjustments to the schedule, we made sure that fellows could get the needed exposure.

Were you concerned about fellows' skill development?

VERMA: No, because the pandemic occurred later in the academic year, and most of them were feeling very proficient with their surgical skill sets. And the break ended up being shorter

than many of us had initially feared that it would be, so we really didn't have to implement any additional skill-building resources.

DELLA VALLE: I would agree with that. But even if the pandemic didn't affect their skill development, they may have had more difficulty looking for jobs, just because travel was so limited.

VERMA: Definitely. The pandemic made it more difficult for fellows to finalize their job opportunities. Given that the world almost came to a standstill, some fellows were worried if their jobs were still going to be available following completion of their fellowship. We spent a lot of time helping them navigate that process. We stayed in communication with their future employers and tried to make sure that they still had a place to go after their fellowship.

Beyond Rush, what was the impact of national and international orthopedic conferences going virtual?

KOGAN: Societies like the American Academy of Orthopaedic Surgeons, the American Orthopaedic Association, the Pediatric Orthopaedic Society of North America, the Orthopaedic Trauma Association, the American Society for Surgery of the Hand, the American Association of Hip and Knee Surgeons, and the American Shoulder and Elbow Surgeons, among so many others, rallied and did an unbelievable job of putting together virtual conferences and webinars. It allowed residents opportunities that weren't available prior to the pandemic and will most likely continue on as an educational tool.

DELLA VALLE: Yes, there was still plenty of education for residents and fellows, as well as the average orthopedic surgeon who was looking for educational opportunities.

Of course, going virtual meant we had a different learning experience. Instead of being together for two days straight, we might have five three-hour sessions every week for a month.

> "Looking back, I think the pandemic made us realize what a privilege it is to be able to take care of patients and to train the next generation of leaders."

Do you think some of the changes that the associations adopted during the pandemic, particularly those related to virtual learning, will continue?

VERMA: Yes, because the demand is there. Many of us enjoyed being able to participate from the comfort of our living rooms rather than having to travel. But we also recognize that moving online limits the collaborative aspect of these meetings, the ability to reconnect with colleagues and friends, and the ability to have robust discussions face to face. I think we're all eagerly anticipating a return to a more normal state as we start meeting in-person again.

DELLA VALLE: I agree; I don't think in-person learning will go away. People are definitely yearning to be together. There were certain facets of the educational experience that just weren't the same by not being together. There is a sense of camaraderie that you just can't replicate virtually.

Nikhil Verma, MD

What pandemic-related changes to medical education and training might you continue at Rush?

VERMA: The biggest one is moving the didactics online. For our small group, an online didactic session works extremely well. We can host these in the evening to gain a wider participation.

KOGAN: Using online video conference platforms also opens up new opportunities. For example, we recently hosted an online panel of past residents who talked about "my first year in practice: what I wish I knew." From now on, we'll be able to pick the right format, in-person or virtual, for these types of sessions.

VERMA: To add to that, I think that many online lecture series from organizations like AANA are going to be extremely valuable supplements for our fellows' education, providing them with in-depth knowledge about care outside of Rush.

Did the trainees have more opportunities to get involved in research and independent study as a result of the pandemic?

KOGAN: Many residents took advantage of the time to do more research.

DELLA VALLE: Yes, for those interested in research, it definitely provided additional opportunities, as there was more "free" time when clinical activities were suspended or reduced compared with our normal volumes. Some of our residents and fellows really took advantage of this time to get more involved with research and were extremely productive academically during this time period. This will provide them with experience, knowledge, and actual publications that will help augment their careers for years to come.

"Both from the hospital side and the group side, the leadership really held us together by keeping us in the loop and being transparent. There was the feeling that everyone was working together and that the goal was to get back, which helped significantly."

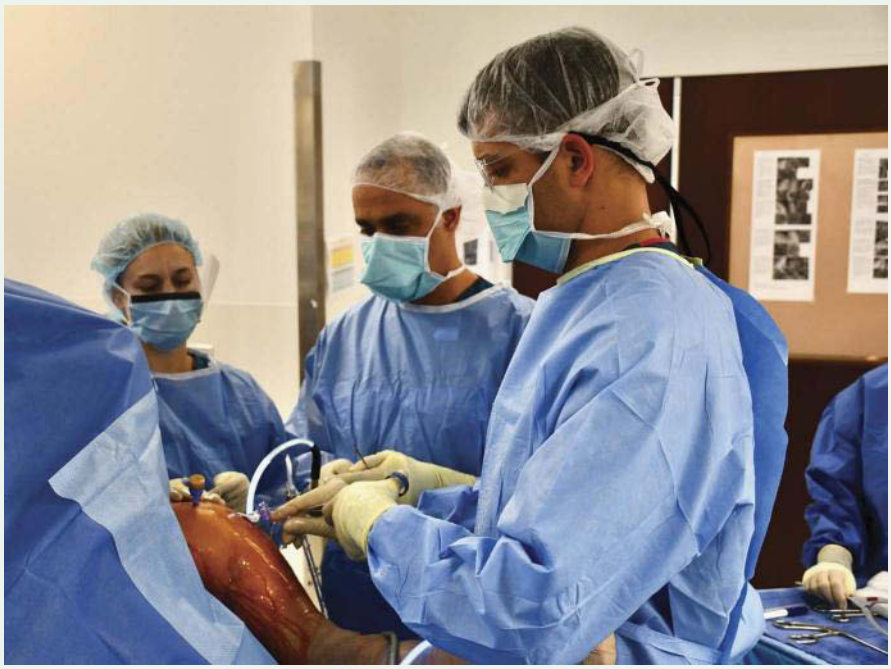
VERMA: Yes, but I would say that the research opportunities were limited to systematic reviews and literature reviews and finishing up work that they were already doing. Because they weren't allowed in the labs due to facility restrictions, they were limited in doing hands-on research.

As faculty, were there any takeaways or lessons learned from your experience during the pandemic?

DELLA VALLE: I learned how resilient our trainees are and how responsive many of my colleagues around the world were to move forward with educational opportunities despite the inability to physically be together. It was quite impressive and shows how necessity truly is the mother of invention. It also made me appreciate how much joy my clinical work and teaching brings to my life. Having that taken away abruptly was a real eye-opener.

KOGAN: For attendings, not being able to work for a period of time and not knowing what the future was going to look like created a lot of uncertainty. However, the leadership got us through it. Both from the hospital side and the group side, the leadership really held us together by keeping us in the loop and being transparent. There was the feeling that everyone was working together and that the goal was to get back, which helped significantly.

VERMA: Agreed. Looking back, I think the pandemic made us realize what a privilege it is to be able to take care of patients and to train the next generation of leaders. I mean, you take some of that for granted as you do it on a day-to-day basis. But when a drastic change prevents you from doing what you do and you've got to figure out new ways to do it, it makes you appreciate the opportunity that sits in front of us. ✣



The Pandemic Didn't Derail Training for This Orthopedics Resident

Matthew Cohn, MD

Orthopedic surgery residents like Matthew Cohn, MD, typically have fairly structured schedules, with days when they are assigned to be in the operating room, in clinic, or on call. But in March 2020, residents' routines were disrupted by the COVID-19 pandemic as they faced a new set of concerns, says Cohn, a Rush Class of 2022 orthopedics resident who grew up in the Philadelphia area.

"Especially during the early phase of the pandemic, there was uncertainty about putting our own health at risk or the health of our families at risk if we were regularly in the hospital," says Cohn, who attended the University of Wisconsin before graduating from Weill Cornell Medical College and coming to Rush. "We were also concerned about being able to continue training at a high level, especially at a time when the world was on hold."

A DIFFICULT SPRING

During those first few weeks of the pandemic, Cohn and his co-residents waited anxiously for an email to see if they were needed in the hospital to help care for patients with COVID-19 in the ED or ICU, or to return to the orthopedic service. After that, residents rotated between weeks on call for clinical duties and being on reserve to fill in if other residents tested positive for COVID-19.

Cohn says leaders at Rush were quick to implement protocols so that residents could return to the OR safely when needed. "They had preoperative testing for all patients fairly quickly, and there was a protocol if residents developed symptoms or had an exposure," he says. At Rush, "I never felt like there was a scarcity of PPE," he says. "I never felt like we were understaffed and at the point where our resources were thin."

Cohn was on the trauma service at Loyola, so his OR time was not as affected as some other residents on elective services. He also was never called to work on a COVID-19 unit or in the ED, although he took care of many patients affected by trauma who were COVID-19 positive and in the COVID-19 ICU.

"When I was back on the trauma service in the first week of April, I had an 80-year-old patient with a basic ankle fracture who was full of life one day and then was in the ICU and passed away 24 hours later due to complications related to COVID-19," he says. "In those first weeks returning to the hospital in

Matthew Cohn, MD, and co-chief resident Bill Cregar, MD, with their mentor, Bernard R. Bach Jr., MD, in Nashville at their first in-person conference since the start of the pandemic.

early April, it was intimidating because there was little understanding of COVID-19. But with the right protective gear, we were all able to do our job without feeling like we were putting ourselves at too much risk."

MOVING TO ONLINE LEARNING

Cohn recalls 2020 in three distinct phases: the first when elective surgeries were shut down, the second during which surgical volumes were lower than normal, and the third when volumes returned to near normal. "One common thread through all of these phases was that online learning became a major part of our lives, whereas it was a relatively minimal part of our education before the pandemic," he says.

Monica Kogan, MD, orthopedic surgery residency director, and other attendings transitioned all in-person conferences to the Zoom platform including the residents' weekly Monday night conference as well as grand rounds. "Dr. Kogan led the charge in keeping us involved, keeping us safe, and making sure we had a sense of what was coming ahead," he says. "All of the attendings were swift to make the transition to online conferences, which began within a matter of weeks."

Having weeks without clinical duties allowed residents to fill gaps in their knowledge, Cohn says. Many used the time to catch up on research or study surgical techniques they had yet to master. "Some residents struggled with not having a normal schedule in front of them, but all of us tried our best to just focus on the things that we could control," he says.

Cohn coped by concentrating on the cases he did have. "If I had fewer cases than normal one day, I'd spend even more time preparing for them than usual and would take diligent notes afterward to get the most out of them," he says.

MAINTAINING KNOWLEDGE AND SKILL DEVELOPMENT

"My co-residents and I were motivated to continue working in some form during that time, and we found that we could progress our orthopedic knowledge outside of the OR, too," Cohn says.

During his downtime, Cohn reviewed surgical techniques on online platforms like VuMedi or the Orthopaedic Video Theater of the American Academy of Orthopaedic Surgeons. Several Rush attendings also developed educational content for the SportsMed Innovate website, which was co-founded by Rush's Shane Nho, MD, and Nikhil Verma, MD. "When surgeons around the country weren't able to operate, producing online educational content became an outlet for many of them," Cohn says. "And we, as residents, benefitted from this because there was a proliferation of high-quality educational content online."

Cohn says the professional orthopedics societies also offered valuable webinars, including many produced by Rush attendings. "Rush faculty were leaders in this movement because they led conferences both for the residency and then nationally," he says. Cohn tuned in for weekly "Fracture Night in America" case conferences from the Orthopaedic Trauma Association as well as webinars from the American Shoulder and Elbow Surgeons, the American Orthopaedic Society for Sports Medicine, and the American Association of Hip and Knee Surgeons.

"For many of us, even during that first month, our schedules stayed busy while at home," he says. "Even though we weren't in-person doing surgeries during those weeks, if we wanted to learn anatomy and learn surgical techniques, the online resources filled a void in that sense."

Eventually, tensions also eased after residents adjusted to their new routines. "My mindset and the mindset of most of the residents returned to normal relatively quickly because we all craved that sense of normalcy," he says.

WHAT WAS MISSING: SOCIAL CONNECTION

Even if his educational opportunities weren't lacking, Cohn did miss interacting with his co-residents during the early weeks of the pandemic. "The camaraderie between you and your co-residents is one of the joys of being a resident, especially at Rush. So, without seeing people in person, it felt like a piece of residency was missing," he says.

Fortunately, that sense of isolation didn't last long for residents. "After the first two months when we were no longer on a rotating schedule and all of us were working in the hospital, we were all eager to return to a sense of normalcy and spend time with each other within the limitations that were in place," he says. "Once we were able to return to in-person conferences and see each other during the course of the day, it made seeing each other even more rewarding."

"I actually don't feel cheated at all," he says. "Residency is a marathon. It's not a sprint. You accumulate knowledge over five years, and there's just no way that a few weeks or even a few months lost would significantly impact that."

A PROMISING FUTURE, UNDAUNTED BY COVID-19

Cohn is currently serving as a co-chief resident at Rush and next year will begin a fellowship in shoulder and elbow surgery at the Rothman Orthopaedic Institute at Thomas Jefferson University Hospital in Philadelphia. After completing his fellowship, Cohn plans to start a practice focused on complex shoulder and elbow surgery with a focus on shoulder arthroplasty, athletic injuries of the shoulder and elbow, and upper extremity fractures.

Looking back on his experience, Cohn says he does not feel like his training was compromised as a result of the pandemic. "I actually don't feel cheated at all," he says. "Residency is a marathon. It's not a sprint. You accumulate knowledge over five years, and there's just no way that a few weeks or even a few months lost would significantly impact that. The incredibly busy orthopedic case volume at Rush rivals any other department in the country, and our training continually benefits from it."

He also credits leaders at Rush for minimizing the impact on orthopedic residents. According to Cohn, "With the right planning, the right team, and the right protocols, we were able train effectively." ✣