Young Neurosurgeons
NEWS
EMPOWERING FUTURE LEADERS IN NEUROSURGERY
Young Neurosurgeons Committee
American Association of Neurological Surgeons
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Editor: Jeremiah Johnson, MD

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CHAIR'S MESSAGE

2017 was a great year for the Young Neurosurgeons Committee (YNC) and we hope to make 2018 even better. Thank you all for being engaged with the committee!

First of all, we had a record number of nominations for positions on the YNC, and it was our most competitive election ever. We hope to continue this engagement in 2018 by finding even more ways for young neurosurgeons to get involved in organized neurosurgery.

Working together with the leadership of the AANS, we are trying to find ways to increase the activity of young neurosurgeons – including those outside of the YNC – in the AANS' initiatives. Many committees and sections have expressed the desire to modernize the ways that they engage with neurosurgeons and the general public. This sort of initiative requires the input of young neurosurgeons. We have come a long way since the YNC had to convince the AANS that it was safe for us to have a Twitter account!

Towards that end, we want to continue to hear from you about the ways you like to hear from us. Is it easy to find the newsletter from emails or on a Google search? Would you prefer for our articles to come out over time on Twitter? Would you be more likely to see our posts on a Facebook group? Do you have social media expertise that you would like to lend to the committee? Please, feel free to reach out to us with your ideas, but keep in mind that new programs require volunteers, and you are likely to be the first person asked!

For our medical student members, look out for information on our new practical course on getting into neurosurgery residency programs! Michael Ivan, MD, the vice-chair elect of the YNC, has put together an exciting program that includes recent successful applicants, young faculty and senior program directors. We will take you through the ins and outs of the entire process with didactic material and ample time for questions and answers. We will end the session with time for applicants to meet with our faculty one-on-one to ask questions and get candid feedback on their application. This is a truly unprecedented opportunity, and we hope that many of you will be able to make good use of it!

We want to continue to develop the YNC as the premier entry point for young neurosurgeons into organized neurosurgery. To be effective in this role, we need to hear from you. Thank you again for your patronage, and we hope to see you all in New Orleans!

Sincerely,

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SECRETARY'S MESSAGE

Welcome all young neurosurgeons to the winter 2018 newsletter! In this issue, we highlight YNC news and updates from the recent 2017 CNS Meeting in Boston and provide updates on issues important to young neurosurgeons. We are thrilled to publish the second part of an interview with Dr. Hunt Batjer (AANS past president 2015-2016). Other issue highlights include an interview with the current Women in Neurosurgery (WINS) chair about the challenges and opportunities for women in neurosurgery, an overview of the ThinkFirst program, an excellent piece about medical student neurosurgery away rotations/interviews and a companion piece for medical students discussing the complex issues surrounding a pre-neurosurgery application, dedicated research year. Please, give us feedback on anything you would like to see in the newsletter or submit article ideas via email at jjohnson.neuro@gmail.com or Twitter direct message @youngneuros.

Best regards,
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YNC HIGHLIGHTS

Michael Ivan, MD, assistant professor at University of Miami, is elected the next YNC vice chair.

AANS Technology Grant
The 2018 AANS Neurosurgery Technology Development Grant, sponsored by the AANS Information Technology committee and the YNC accepted applications for the 2018-2019 cycle through January 1. It is hoped the committee will continue with the grant next year. For more details, search for the AANS Technology Grant or click here.

Join the YNC at the AANS 2018 Annual Scientific Meeting April 28th – May 2nd in New Orleans. The YNC will host the inaugural How to Apply to Residency practical course for medical students as well as the annual Young Neurosurgeons Research Forum, featuring the Osler Lecture by Dr. Fred Meyer, the Top Gun Competition and the 2018 Young Neurosurgeons' Luncheon with guest speaker Dr. Michael Lawton.

Neurosurgery Match

Medical students thinking of matching to neurosurgery residency, head over to Neurosurgerymatch.org for helpful information and resources to help navigate this complex process.

Service in Organized Neurosurgery: An Interview with AANS Past President Dr. Hunt Batjer (Part 2)

Benjamin Kennedy, MD, conducted this interview with Hunt Batjer, MD, professor and chairman, department of neurosurgery at UT Southwestern during the 2017 AANS Annual Scientific Meeting

Benjamin Kennedy (BK): You spoke in your presidential address in 2016 about de-professionalism and commoditization of medicine. Do you think that in recent years there have been any important strides made on a large or small scale in fighting that tide?

Hunt Batjer (HB): It's a very important question. The cause of it is increasing shift work and decreasing patient ownership or patient responsibility: "I don't own it because it's the next guy or the next gal who comes on shift's problem to solve." Instead of ownership forever. I recoil every time I hear this: "We're cutters." Talk about the train being off the tracks. That personifies it. "We're cutters" means we're technicians. Therefore, we're like a radiology technician – they're very qualified, they come in and they do a very focused thing, related to a patient encounter. They don't have ownership over it, except for that one technical exercise, the rest of it is irrelevant. I grab people when they say that word or something similar, and say "That is complete nonsense. You are a physician who cares for a broad swath of neuroscience conditions."

There is also an affront by all the regulatory matters that we face – whether it's the EMR, the coding issues, the ICD-10 – all these things that try to create a commonality between medicine and the energy sector, or the retail sector, we're all just part of the economy. We're just 20 percent of it, as opposed to having a very special place. Why do we have that special place? It is a very important social contract. Our public expects us to be there when they need us. We have to be there. And in trade, they treat us with enormous respect. You feel it when you're in an examining room. The idea that they trust their loved ones in your hands is truly a phenomenal event. Listen to the network news now. See how other leaders in our country are being treated by the public and by the media. We have a very privileged position, which we will lose if we fall off that train track.

Finally, we need to keep our training and testing standards at the highest level. I was just at an American Board of Neurological Surgeons (ABNS) directors' luncheon, where the more senior people in there were saying "Be careful, because that exam is getting awfully soft, and we need to make sure it is strong enough to pick up people who should not be certified! It must be strong enough where people will prepare for it. Because the oral board exam is the last time that people really focus their energies on getting a broad base of knowledge that they will hold for a while." I think those are the basic tenants of fighting de-professionalism and commoditization within our field.

BK: You talked in your address about things you're proud of from organized neurosurgery, like our boot camps, CAST, the Summit and the NeuroPoint Alliance, but what do you think the most impressive example is of how neurosurgery has led the rest of medicine?

HB: Look at the way that Katie Orrico leads us, all the affiliated organizations. She really takes over and pushes for our patients' interests in Congress. Neurosurgery is leading, but all of a sudden all of sub-specialty medicine is behind her efforts. Look at the influence we have at the ACGME. Who does [ACGME CEO] Tom Nasca look to? It was Ralph Dacey, then myself, then Kim [Burchiel], now Nick [Barbaro]. Those are the people he looks to for advice. Who fought the IOM the hardest on resident work hour restrictions and to the most effect? We did. We argued that 56 [hours per week] was the wrong number. It was a bad number for patients of neurosurgeons. And just because the Macy Foundation said it, doesn't mean that we have to do it or that it's good. There are dozens of other instances where people from our discipline, whether it's in their own community or on a larger scale, have taken huge steps of leadership to protect children on the playground, or put helmets on bikers – ThinkFirst, in the 80s and 90s. I think you can point your finger in about a dozen directions to show how a small discipline of 3,000-4,000 people has had an enormous impact.

Hunt Batjer, MD

Benjamin Kennedy, MD

BK: What inspired you to become a neurosurgeon, and how was that the same or different from what inspires you as a neurosurgeon?

HB: They are totally different. All I ever wanted to do was pitch for the Yankees. But I remember seeing a several-hundred-year-old drawing that showed a transparent head with mathematical coordinates targeting something in the head. Just a piece of art. I thought "Man, that's fascinating." I like to do stuff with my extremities; I loved neuroscience in high school. And that stuck in my mind, besides pitching for the Yankees, the neuroscience stuck. So, I was drafted by Baltimore out of high school to play baseball. They had a great pitching staff, three of who went to the Hall of Fame, so it was a crappy team to go with when I was young, so I

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Service in Organized Neurosurgery: An Interview with the Past AANS President Dr. Hunt Batjer (Part 2)

(Continued from previous page)

took a scholarship opportunity to go to the University of Texas and hurt my arm there – rotator cuff. So, I went to medical school. I was influenced by our chairman of general surgery at UT Southwestern, who was a vascular surgeon. I matched in general surgery under him, but I asked to have neurosurgery as my first elective as an intern, and that did it. I saw Duke Sampson doing his stuff, saw some interesting spine stuff and some neuro-oncology. I called Dr. Clark's office [Neurosurgery Chairman], and didn't get my call returned. I finally called and got Duke. I said Dr. Sampson, "I'd like to make a change, I'd like to be a neurosurgeon. What do I do?" He said "Where are you?" I said "I'm in the ER." He said, "Just stay there, I'll be right there." So he brought me this neurosurgery application, it was thick. I said "I really appreciate that, let me work on that this weekend, I'll get it back to you –" He said "Oh, just sign it." That was my entry into neurosurgery.

After I got into neurosurgery, I really loved cerebrovascular disease – it was a worthy adversary. And I knew from day one that I could do that. I was watching cerebrovascular surgeries, and I said "You know, I can do that better." You know, I was a little bit arrogant, but I knew I could. I just really enjoyed it so much. When I was chief resident, I looked at a couple private jobs, and they were offering a bazillion dollars. Duke and I did a case together, and on the way to see the family we stopped by the lounge to go to the restroom. He said, "I really like the way you do vascular disease. I'm tired of this shit, why don't you come here and do it with me? You can have all you want." We were at the urinal at the time. I said, "That sounds pretty good; we don't have to shake on it right now do we?" And it was just rompin' and stompin' after that. It just sort of became a driving force in my life. I had this feeling after I got drafted by Baltimore. When the scout came to see me I just sat there, a West Texan, and I said "Are you telling me you're gonna pay me to play baseball?" And flash forward, sitting there with Duke one night, just totally exhausted, "Can you believe they pay us to do this? Isn't that incredible?" That to me is really what it's all about. When you're self-fulfilled in what you're doing, nothing else matters. Economics are going to change in medicine for sure, but they can't take that away from us. We'll be doing it for a little bit less, and we'll be fine.

BK: Where do you see the field in 15 years? What do you think will be the biggest changes?

HB: We have systems in place now to better evaluate new and disruptive technologies. Historically, we would get a new widget, and boom, it was standard of care. Every patient would get one of those put in, whatever body part you're talking about. And now, a very positive development (unfortunately, it didn't come from us, the public forced it on us): "Prove it is safe and effective." I think with our registries in place and the FDA very keenly interested in post-market surveillance (because they can't afford to miss either) we're going to get a lot better at making good decisions to change practice than we have historically. All the evidence would suggest that we are going to have a crescendo of new, disruptive technologies during your practice life and that of your trainees. Particularly early in your career, there's a need to be nimble and not only shift in practice locations (the ideal place you want to live is New York City, and that may not be doable. You may have to be in Peoria, for example, to accomplish what it is you want to do). So, we're going to have to be flexible about where we practice. We have to be willing to adapt and potentially change specialties: there may be specialties that go away with the acceleration of technology that we've seen, especially with some of the deregulation that's going to make it easier to innovate. I think people need to be prepared for that psychologically. And we're looking at redesigning GME programs for mid-career. NREF is looking at helping to fund that. I think we can collectively help each other by donating to NREF. I think the redesign is going to be a real challenge and make a real difference, but one that we'll handle.

The Young Neurosurgeons Circle of Giving

Established in 2016, the Young Neurosurgeons Circle of Giving introduces neurosurgical residents into the culture of philanthropy. The goal is to increase donations over a lifetime and eventual induction into the NREF's premier recognition society, the Cushing Circle of Giving.

Membership is open to residents who demonstrate a commitment to advancing neurosurgery with a cash contribution of $500 (USD) or more. Young Neurosurgeons Circle members qualify for benefits as listed on the website. Eligibility for inclusion in the Young Neurosurgeons Circle expires at the conclusion of residency.

Benefits/Recognition
All members receive the following benefits and recognition, except where noted:

- NREF pin
- NREF Donor window decal
- Acknowledgement on NREF.org
- Acknowledgement in the AANS Annual Report
- Invitation to NREF Donor Recognition Reception
- Access to VIP Donor Lounge at the AANS Annual Scientific Meeting
- $100 gift voucher for use on AANS Marketplace (Gold level ONLY)

Click here for more information.

NREF
Neurosurgery Research & Education Foundation

ThinkFirst: The Public Health Arm of Organized Neurosurgery

David Dornbos, III, MD | Department of Neurosurgery | The Ohio State University Wexner Medical Center

David Dornbos, III, MD

Waking up in a panic while undergoing an MRI, my last memory was riding away from the research facility on my bike. Despite being an avid cyclist and riding thousands of miles without a scratch, I never expected to endure such an accident. While I had no recollection of the crash, my fractured helmet told me everything I needed to know as I went in and out of consciousness. A skull fracture, TBI and ICU stay later, I was finally at home and recovering from an accident that could have been substantially worse.

When I was initially asked to serve as the YNC liaison on the ThinkFirst National Injury Prevention Foundation Board of Directors, I knew very little about their mission. I had previously passed out helmets to children at an AANS meeting, but had no idea how much more the organization did to promote head and spinal cord injury prevention.

ThinkFirst was started by two neurosurgeons through the AANS and CNS more than 30 years ago. Dr. Clark Watts and Dr. E. Fletcher Eyster shared a mission to tackle a significant health crisis: the astounding number of injuries and deaths from impulsive teen behavior, of any etiology, causing incurable brain and spinal cord injuries. Seeing a positive response to injury prevention programs in their communities, the development of a theory-based national program was initiated. Neurosurgeons throughout the United States began recruiting their staff to start ThinkFirst chapters and began providing programs to teens in their local communities.

ThinkFirst programs are unique in several ways: 1) health educators (physicians, nurses and others) go to local schools and speak directly with students; 2) health educators hire and train people who have had a brain or spinal cord injury to co-teach classes, sharing their personal story; and 3) they explain the science behind brain and spinal cord injuries and the realities of the life-changing outcomes.

Soon after the initial growth of ThinkFirst, ThinkFirst For Kids was launched, targeting younger children. Many chapters currently incorporate helmet-fitting events for schools using grants from businesses and government agencies to fund helmets and other chapter costs. Providing further validity, a three-year study, funded by the National Highway Traffic Safety Administration, revealed a significant benefit of providing booster seats and safety education for children and their parents.

As ThinkFirst has continued to grow and develop, new safety education programs have targeted individuals of all ages. There are now programs designed to prevent falls in older adults and a program focusing specifically on concussion prevention for teens. Most recently, ThinkFirst For Your Baby was developed for new and expectant parents, grandparents and caregivers, providing guidance to create a safe environment for infants and families.

In addition to the developed programs, there are also injury prevention resources on the thinkfirst.org website. Under 'Facts and Publications' you can access published articles on ThinkFirst, as well as a number of injury prevention 'Fast Facts' publications that provide quick access to talking points for interviews and papers. Need a handout for kids on fitting their helmet correctly? There are two to choose from. Need it in Spanish? It's there, thanks to the Spanish translation team of ThinkFirst neurosurgeons from Mexico, Chile and Honduras.

Rather than simply providing periodic presentations on injury prevention, the programs utilized by ThinkFirst chapters are deeply engrained in their local communities, promoting a culture of safety. The ThinkFirst network has continued to expand with over 150 chapters within the United States and more than 35 international programs. Nonetheless, there is plenty of opportunity to expand, as there are large communities without local chapters. Check the Chapter Directories under 'Chapters' at thinkfirst.org to see if a chapter is needed near you, or if there is a nearby chapter with which to get involved.

There is a great need for injury prevention programs within the country and internationally, and neurosurgery should be leading the charge in preventing brain and spine injuries. Neurosurgeons are in a unique position to assist in public education and safety awareness in their institutions and local communities. Level I and II trauma centers are required to have a designated injury prevention coordinator providing injury prevention education, and the ThinkFirst National Injury Prevention Foundation provides the material, resources and culture to be a major asset in neurotrauma prevention. A simple helmet saved me from a potentially catastrophic injury, and providing a child with a helmet, a teen with the incentive to make safe choices, new parents with baby safety information or an elderly patient with a means to prevent falls can pay major dividends.

ThinkFirst
National Injury Prevention Foundation

Women in Neurosurgery: Challenges and Rewards

Ann Parr, MD, PhD

Liaison Kimberly P. Kicielinski, MD, MPH

YNC WINS Liaison Kimberly P. Kicielinski, MD, MPH, sat down with WINS chair, Ann Parr, MD, PhD, to discuss women in neurosurgery and the role WINS plays in promoting women leaders in organized neurosurgery.

Kimberly Kicielinski (KK): Tell me more about your position at Minnesota and your position in WINS (Women in Neurosurgery).

Ann Parr (AP): I'm an assistant professor at the University of Minnesota. I have an appointment as the director of spinal neurosurgery. I also have an appointment with the Stem Cell Institute. I'm 50/50 a clinician and a researcher. In reality, it's like 100/100. I do 80 percent spine and the rest general neurosurgery. I run a translational lab on spinal cord injury, and I do stem cell transplantation for spinal cord injury. I also have some clinical trials in spinal cord injury.

I'm currently the chair of WINS. WINS has an ascension structure and holds four positions on the WINS Executive Committee (EC). In the WINS leadership, you start at the treasurer position, and hold each position for a year. There's an election among the WINS members for the treasurer every year. There are also two member-at-large positions. In 2014, WINS officially became a joint section, and so now we have a chair rather than a president, and also we have a voice within the AANS and CNS as a joint section.

KK: What attracted you to neurosurgery?

AP: I have been interested in the neurosciences since being an undergraduate. I did undergraduate research and a thesis in a neuropharmacology lab. That was serendipitous. I was looking around for a research experience, and I ended up in a lab doing fetal alcohol research. I felt that the lab was a really good fit for me, and my mentor there was amazing. I thought of doing a PhD and a strictly research career, but then I decided that I thought I was more suited to medicine. I liked the idea of actually treating people. A lot of it was mentorship: I went into neurosciences because I had this great mentor and then the same in medical school. I did seek out a mentor, a plastic surgeon. I almost went into plastic surgery rather than neurosurgery because he was an excellent mentor. He was so encouraging and just really let me do a lot of things, so I became interested in surgery. When I was trying to decide my sub-internships, I did some in plastics, but I also decided to do some in neurosurgery because it made sense because I was so interested in neuroscience research and surgery. I got accepted into neurosurgery. I decided that I wanted to do a PhD during my neurosurgery residency, which in Toronto is not unusual.

KK: Why do you think there are so few women in neurosurgery?

AP: I think that a lot of it has to do with this myth of neurosurgery. The difficulty of a neurosurgery residency is not a myth. It's true that it's very difficult. It really takes a lot out of you. My plastic surgery mentor encouraged me to go into plastics and my research mentor encouraged me to do research, but I can't think of a single person who encouraged me to go into neurosurgery. A lot of it was discouragement. It was just the idea of, "Why would you really want to do so much work and work so hard. You know you can't have a family or you can't get married and you can't do this and you can't do that if you're doing neurosurgery because that has to be your entire life." I'm not married and I don't have children, but I could. I think it's a myth you can't do all these other things. If you want a huge life where you're doing all these other things, it's difficult to do during residency, but I think it's increasingly easier with the 80-hour work week. It's still a very difficult residency. I also didn't know any women who were in neurosurgery when I went into it. I think it's just this idea that you can't do it, and I think that's a myth.

KK: You talked about the challenges of deciding to pursue neurosurgery, but are there other specific challenges you faced in residency or in your career that you felt were more specific to being a female?

AP: We all hear horror stories about overt sexism or misogyny that we all experience as women. Certainly, I've had a few of them. The funny thing is that the most discouraging thing is not something that anybody does that's focused against you. The thing about being one of the only women in a program is that it's kind of lonely. It's like the old locker room story where you feel like everybody else goes into the men's change room for example, and you're in the women's with the nurses. It makes you feel kind of excluded. They [the men] could be the most encouraging or inclusive people in the world, but at the end of the day you still feel like you're not one of them in some sense. And I think that can be difficult.

My best friends in residency were other female surgeons. In Winnipeg, where I started my residency, there was nobody but me. When I moved to Toronto, the program was really big. We had more women in the program than many other programs in the world. We talked about inclusivity and mentorship and how important that really was and is. I became staff here at Minnesota seven years ago and actually Aviva Abosch, [MD, PhD] was staff also, and we had a few female residents. Aviva was really good, and she still mentors me a little bit. I didn't have that ever before in actual neurosurgery. Other mentors don't really understand what it is to be a neurosurgeon. Aviva

is somebody who also has put my name forward for things. I find myself, all of a sudden, getting asked to speak at events. I'm pretty certain that at least a couple of those things came because she was sitting on the scientific committee, and they said, "Who can speak on this?" and she put my name forward. If we all do it for each other then I think all of sudden we get asked to do things. In some ways, I'm on the other side of things now. WINS has given me the opportunity to sit on scientific committees, and now I realize how arbitrary a lot of the speakers on some things are. They sit around and go, "Let's have a talk on this. Who is an expert in that area?" If you happen to know an expert, then you say that person's name. If it's mostly men around the table, they may not know you are an expert in that area. The other thing we have with WINS is the speakers bureau that covers things like tumor, CV, pain and other things, like education and mentorship. If you feel like you are qualified to speak in an area, we encourage everybody to join the list. Women often don't feel as qualified to do things that they're generally very qualified to do. I have to say the list of female neurosurgeons is still disappointingly short, but I think that will change now that a lot more women are graduating – in WINS our fastest growing subsection is the residents and medical students.

KK: Why do you think it's important to train women?

AP: I think the most important thing is to train the best people. If you just look at the facts, the facts are that 50 percent, at least, of the medical school classes graduating now are women. As a profession, we want the best people in neurosurgery. If we're not having 50 percent women applying to neurosurgery, then there is something wrong, because we're missing out on some of the best and brightest who just aren't interested. Early exposure and encouragement to women are important. Male mentorship is important. We want to target the best and brightest, which includes both men and women.

KK: How can we encourage more women to go into neurosurgery?

AP: I think early exposure and mentorship are two key things. There are a lot of people, including men, that don't think about neurosurgery because they just aren't exposed to it. A lot of medical schools don't have neurosurgeons come in. I also screen residency applicants every year and there are a lot of applicants who have been doing a lot of neurosurgery related research for years. There aren't many people who just decided at the last minute that they wanted to do neurosurgery. At the University of Minnesota, I'm the faculty liaison for the neurosurgery interest group, so I think that's really important to make sure everybody is aware of the possibilities and what's out there. I think mentorship is really important. If a medical student asks me to mentor them or meet with them or shadow me, I will never turn them down. I've learned over the last few years, I have to say no now to undergrads, or high school students. I've found that there's not enough of me to go around, because I've been the only female neurosurgeon at the medical school for the past few years. The one thing that I've tried to do is to match the people requesting mentoring with the female residents and sometimes with the male residents. They may have a little bit more time for mentoring than I do, and what residents do is far more interesting than what I do. Students have a seven-year residency that they have to get through first so I think it's more practical for them to see what's coming up.

KK: How does WINS support females in neurosurgery?

AP: We have a tripartite mission of education, leadership and mentorship. Three years ago, when we became a joint section, we were granted a scientific session during the AANS and CNS meetings. We tried that once. We realized that actually wasn't the best strategy because what it did was take female presenters away from their subsequent section, because it ran at the same time as the CV Section or the Pain Section. We really didn't want that. We said, "What's a meaningful way that we can contribute?" That's when we decided to really focus on these other three things.

We have integrated programming. We had a leadership seminar and two lunches. One was on education and the other was on mentoring at the last CNS. In the spring at the AANS, we have the Louise Eisenhardt breakfast, which we have every year. This year we're having Angela Duckworth, who wrote the book Grit, talking about the power of perseverance and how you can develop that skill. We also have a faculty development seminar that we're doing in conjunction with another group. We also have a lunch and learn mentoring session where we're going to send around a request for people that want to be mentored and more senior people who want to mentor, and we're going to match people up so that one day they can sit down and eat lunch together and talk about different issues – very unstructured, very informal. We're hoping that leads to more fruitful mentor-mentee relationships.

We're also doing a different thing where we're going to have symposia within a rotating subsection. This past year we had the first annual WINS retreat, and there were 60 registrants, in conjunction with the National Neurotrauma Society. This year I decided to do it with the Spine section. I do mostly spine, and also Marjorie Wang is the chair of the spine section this year, and she's only the second woman to ever hold that position. WINS is having symposia on Friday afternoon on the psychology of leadership. We're going to be talking about Myers-Briggs testing and how that impacts your personality and your leadership skills and potential for leadership.

These activities aren't only for women. We also don't want to be exclusive of men. Again, what would be best for the profession in general would be to have the best and brightest of both men and women. Men also need encouragement, and they also need mentorship. While we focus on women, it's not to the exclusion of men. WINS is open to everyone. We have a general meeting at the AANS and at the CNS meetings. It's informal. People can come in and out if they have conflicting meetings, but everybody, both men and women are welcome. Young people are especially encouraged to come and get involved. If you come, we'll find a job for you, a way to get involved.

Revolutionizing Neurosurgical Education: *The Neurosurgical Atlas*

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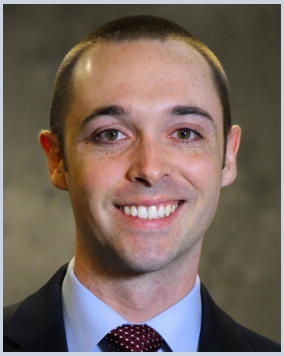

Joseph R. Linzey

Striving for technical excellence in neurosurgery is a fundamental goal for every neurosurgical trainee. The process of obtaining the level of technical excellence neurosurgical patients require takes passion, commitment and dedication. *The Neurosurgical Atlas* is the product of the devotion of Dr. Aaron Cohen-Gadol to the process of analyzing and educating the rising generation of neurological surgeons regarding the art of microsurgery. *The Neurosurgical Atlas*, which is partnered with the Journal of Neurosurgery (JNS), is primarily composed of three main divisions, – Grand Rounds, Volumes, and Operative Video Cases – which can be utilized by medical students and neurosurgeons at all levels of training to hone their surgical skill, anatomical awareness and neurosurgical knowledge.

The Grand Rounds section of *The Neurosurgical Atlas* amasses 140 lectures from leading neurosurgeons around the world about topics ranging from best practices for microsurgical clipping of an anterior communicating artery aneurysm to methods for evaluation and surgical treatment of spinal deformities to advice on how to select your ideal research mentor. Seven years of high-quality, online lectures are available and organized into topics of interest. There are also videos to assist residents with their oral boards or transition into the "real world" after residency.

Within the Volume portion of *The Neurosurgical Atlas* are descriptions of disease pathologies, diagnostic findings, important operative anatomy and step-by-step operative approaches and considerations in 350 chapters and 12 volumes. These descriptions are supplemented with original and beautiful illustrations and high-quality operative photographs to ensure optimal understanding and visual mastery of the discussed topic. There are also about 10 operative videos per chapter in the right column (Figure 1). *The Neurosurgical Atlas* has also begun to develop highly innovative and realistic 3-D anatomic models that can be manipulated in real time to gain a greater appreciation for how complex cerebral anatomy interacts with its surrounding structures. These well-written chapters provide key details, including pearls and pitfalls, of nearly all neurosurgical operations and serve as an ideal summary for a medical student or junior resident attempting to learn about an operative case before the night of the procedure. It should be noted that there are chapters describing tools to assist a medical student in matching into a neurosurgical residency, as well as a new chapter devoted to assisting residents and fellows with smoothly transitioning into the "real world."

The Neurosurgical Atlas Founder
Aaron Cohen-Gadol, MD, FAANS

The Neurosurgical Atlas is truly unique in its extensive and exhaustive library of over 1,100 operative videos. The Cases section of *The Neurosurgical Atlas* houses high-quality operative videos that walk the viewer through the relevant points of a patient's history and radiographic findings before providing meticulously edited operative videos, which highlight the key techniques and decision points in an operation. Videos of common procedures, complex and rare procedures and procedures with intra-operative complications or bleeding are all available. All levels of skill, from a medical student attempting to understand the basic steps of an operation before entering the operating room, to professors of neurosurgery looking to refine their surgical prowess can benefit from these videos.

As technology continues to allow us to modernize and revolutionize our educational process, *The Neurosurgical Atlas* has managed to pioneer and maintain stride with these advances and provide medical students and neurosurgeons with the necessary tools to achieve the level of excellence and eventual perfection for which we strive.

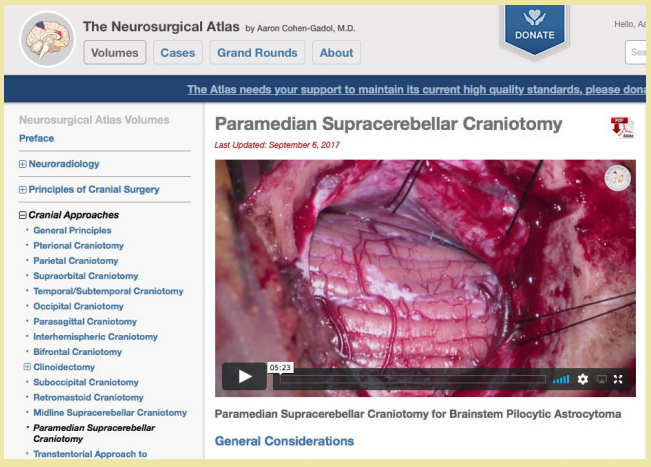

Figure 1

Hot on the Trail: A Field Guide to the Neurosurgery Residency Match

Christopher S. Graffeo, MD | Neurosurgery Resident | Mayo Clinic

Christopher S. Graffeo, MD

Pursuing a residency position in neurosurgery is an intimidating prospect for many medical students, due in large part to the competitiveness of the field, which is dramatically worsened by the lack of clear, concise information regarding the application process, expectations and best strategies for preparedness. With this in mind, NeurosurgeryMatch.org launched as a joint effort by the AANS, SNS, WINS and YNC to provide a centralized resource for students to help demystify the experience and encourage a broader interest in neurosurgery among top students. As an adjunct to that formal overview, the following is a first-hand account of some key lessons that will equip you for a successful neurosurgery match.

You Must be this Tall to Ride

As with any competitive specialty, objective criteria will get you in the door and your application read more critically. Honors or high pass in key clerkships, such as medicine, surgery and, of course, any neurosurgery rotations is critical. Step 1 is an important benchmark. Although people do match with scores in the 220s and 230s, many top programs see 240s and 250s as requisite, absent an exceptional application in other respects. Scientific publications are similarly essential, but keep in mind that, although first-author manuscripts on neurosurgical topics is optimal, many applicants (myself included) did research in other fields or worked with more senior residents and staff as a second author on their manuscripts that they were subsequently able to present as posters or talks at meetings.

Away Rotations

Selecting institutions for sub-internships (sub-Is) can involve a complex calculus, as each rotation needs to serve several goals. The away programs will be your best chances at matching, and so rotating at institutions you know you would not want to rank highly for geographic or personal reasons is wasteful. Similarly, if you are a borderline applicant, consider rotating at one less-competitive program, where you and your interest in their program will make a significant impression. Geographically, it may be helpful to select rotations in different parts of the country to signal that you are not limited to your home region. And, to better inform your own experience, consider selecting two programs that are fairly absolute in terms of their tone and personality, particularly as predominantly "academic" or "clinical" institutions – this will provide a useful spectrum of program features and characteristics to compare others against on the interview trail.

You may hear talk from your medical school classmates about avoiding a rotation at your top choice, so that you do not "ruin your chances" by making a poor impression. This is bad advice. Yes, the experience of being constantly under the microscope for a month is intimidating, but the world of neurosurgery is defined by performance in the face of high stakes. If you are uncomfortable with a benign risk such as an away rotation or worried that you will not be able to perform consistently for a month, a reevaluation of your priorities and career choices is in order.

Ideal sub-I performance is nuanced and demands substantial insight into your own personality and behavioral patterns as well as the expectations of the environment. At all times, be interested, helpful, respectful, professional and present – without being obstructive. Even the best students slow down a resident team; show sensitivity to this, and you will stand out by default. Be early and prepared; know your patients, their imaging, their numbers and their plans inside out and ask if there is any pre-rounding you can assist the residents with in the morning. Scrub as many cases as possible, stay late and offer to take on low-impact scut work where appropriate (dressing changes, bed checks, etc.). However, if you are told there is nothing to do or explicitly encouraged to leave the hospital, always do as instructed – few things annoy residents more than a student who does not listen! If possible, make a point to meet and scrub frequently with the chairman, the program director and the senior faculty – while showing sensitivity to the fact that any other rotators will share these same goals, and you need to always be collegial and considerate. Residents will see how you treat co-rotator for evidence of how you'll get along as a colleague, if matched. Spend time with the chiefs and the juniors to get a real sense for the life of the program and its busy service. Also, get to know the PGY-5 residents, as they are most likely to be your chiefs during your PGY-2 – a crucial relationship.

Almost every rotation will expect you to give a student talk: have a 10-20 minute slide show at the ready. If this is not brought up directly, inquire among the junior residents whether it is standard practice at their program. Ideally, your talk should focus on your research, even if it was not in neurosurgery; however, if you truly have no research to discuss, consider selecting an interesting case from your home institution, and present it alongside a brief review of the topic. You will need at least one recommendation letter from each away rotation. Before the mid-point of the month, reach out to the coordinator to schedule your exit interviews with appropriate faculty; neurosurgery staff are busy and may have travel planned, so you need to plan ahead and avoid missing the opportunity to make a personal impression and request letters face-to-face.

Interview Insights

Most of the keys to a successful interview experience are self-evident; nevertheless, every year a surprising number of students do not heed basic common sense and

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MEDICAL STUDENTS MATCHING IN NEUROSURGERY, Hot on the Trail: A Field Guide to the Neurosurgery Residency Match

(Continued from previous page)

damage their prospects. Keep in mind that every moment of every interaction is part of your interview – rudeness or inconsideration with a coordinator or resident, even via email, will quickly ruin your application. If you do not get the date you are most interested in, politely ask to be placed on a waiting list; do not complain or express any negativity about the process.

On the interview day, show up early, be well dressed and show deference to the conservative decorum of our specialty – flashy dress may be remembered, but not favorably. Socialize with the other applicants, residents, coordinators and staff and be amicable, flexible and positive at all times – there is no room for negative commentary of any kind, and a student who criticizes a colleague or institution will be identified as foolish at best and untrustworthy at worst. Show grace in the face of the unexpected: flight delays, hotel cancellations and other logistical road bumps are common and yours will be met with kindness and understanding by the program, so long as you keep your cool and remain professional at all times. By contrast, cancelling an interview at the last minute (absent a cancelled flight) will incite resentment against you that may spread beyond that institution, as you have denied a colleague and the institution the opportunity to fill that interview slot.

During the formal interviews, be prepared to speak about every item on your resume in thorough detail. A forgotten abstract in an unrelated field on which you were a minor author may seem safe to ignore, yet it could pique a particular attending's interest unexpectedly – do not be caught off guard. Similarly, if there are obvious deficiencies in your board scores or grades, if you've never done any research or if there are other significant black marks on your record, assume you will be asked about them, and take ownership for the shortcomings in a way that shows maturity, insight and growth. Consider rehearsing these answers beforehand with a faculty or resident mentor at your home institution and, above all, never ever lie.

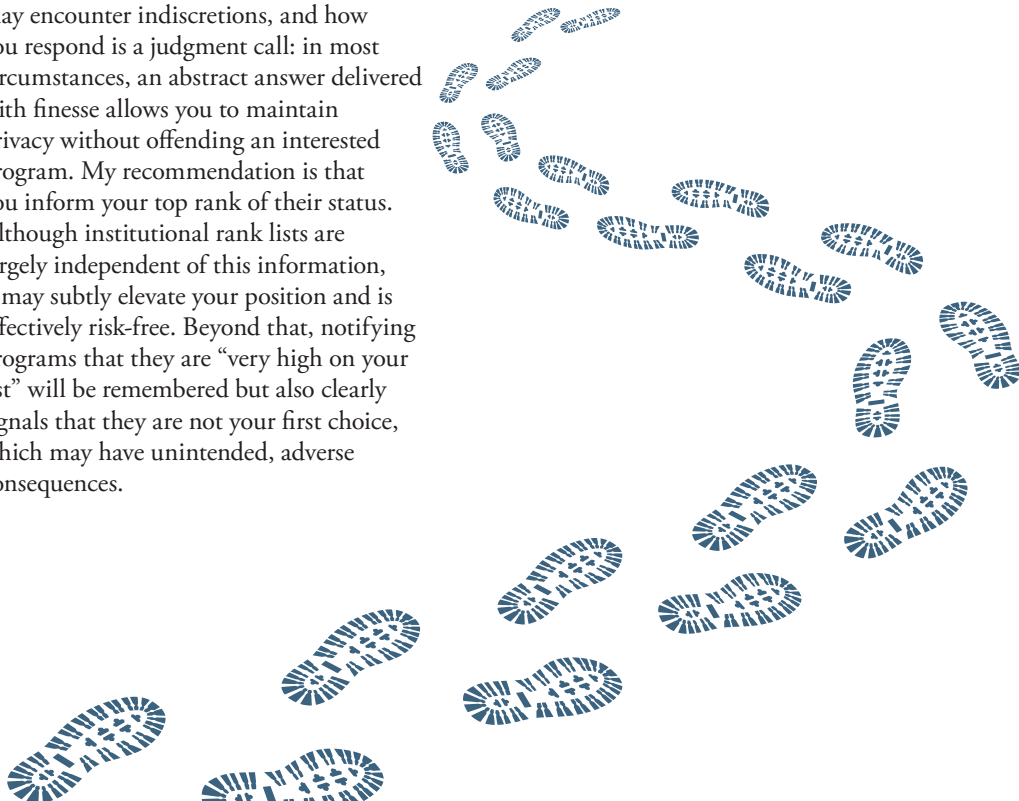
At the dinner, be friendly, sociable, engaging and participatory, but do not make a fool of yourself. Dominating the discussion is inconsiderate, and you will be identified as a poor candidate for seven years in the trenches together. Over-indulging, particularly where alcohol is concerned, is an easy way to ruin an otherwise successful interview and potentially earn a negative reputation elsewhere, if your misbehavior is spectacular enough to earn you a spot in the pantheon of trail lore.

Following up, Following the Rules and Following your Instincts

Sending thank you notes is appropriate after any interview and especially recommended if you intend to rank a program very highly. Brief and personalized letters to the chairman and PD are typical and potentially supplemented by notes to other staff or residents who you had an especially memorable interaction with. Email is acceptable, and may be more likely to garner a response. Be attentive during the interview, as a program may specify that they either do not want follow-up or will accept follow-up but are not permitted to respond.

When rank time comes, you are permitted to inform institutions of your plans, but are not required to do so – a program that asks about your decisions is in violation of NRMP policy. Still, you may encounter indiscretions, and how you respond is a judgment call: in most circumstances, an abstract answer delivered with finesse allows you to maintain privacy without offending an interested program. My recommendation is that you inform your top rank of their status. Although institutional rank lists are largely independent of this information, it may subtly elevate your position and is effectively risk-free. Beyond that, notifying programs that they are "very high on your list" will be remembered but also clearly signals that they are not your first choice, which may have unintended, adverse consequences.

Ultimately, solicit advice broadly, but settle on a rank list that is highly personal. Avoid allowing the choices of your colleagues, biases of your mentors, preferences of your family members or pre-conceptions of the neurosurgery community to excessively shape your decisions: you are the one signing up for seven years of service and picking a place to lay the foundation of your career. Consider all the variables – case volume and complexity, access to mentorship in your areas of interest, research resources, geography and culture and so on – but at the end of the day, go with your gut. For a motivated resident, almost every institution can provide outstanding training and tremendous opportunity. By contrast, the ineffable "fit" between yourself and your program can make residency feel effortless or unendurable. Assess every community honestly, and consider yourself as a resident with as much introspective insight as you can muster: there is no substitute for synergy, and there is no amount of prestige that will make up for a poor fit. Finally, take a deep breath. In many ways, the process is out of your hands, and accepting that will make your application year much less psychologically burdensome. You have worked hard and come far; trust your instincts, trust the Match and good luck!



A Research Year for a Medical Student Pursuing Neurosurgery Training

Ali S. Haider | Medical Student | Texas A&M

Ali S. Haider

Medical students interested in neurosurgery are frequently drawn to the specialty by the beauty of operating on the nervous system and the profound impact neurosurgical research has on patient care. I was no different, and with the goal of pursuing a more robust foundation in neurosurgical research, I elected to spend an additional year outside of the traditional medical school curriculum for a research year in the laboratory of neurosurgeon James T. Rutka, MD, PhD, FAANS, at the University of Toronto.

My primary project in the Rutka Laboratory focused on elucidating the molecular properties of chordoma tumors and performing pre-clinical drug testing in a novel chordoma xenograft animal model. I was also able to contribute to a number of clinical projects, such as case series, review articles and book chapters during this time. This dedicated period of neurosurgical research allowed me to strengthen my foundation in the scientific method and acquire new laboratory techniques, while also refining my scientific writing.

Perhaps, an even more meaningful educational experience was the opportunity to meet the many world-class neurosurgeon-scientists at the University of Toronto and learn how each uniquely developed their career. Refreshingly, my colleagues in Toronto were a heterogeneous group from all over the world, and I enjoyed seeing the diversity of knowledge and backgrounds come together for one goal – advancing patient care through research. The greatest strength of my research year was my mentor. Dr. Rutka would go out of his way to make me feel welcome in my new surroundings and frequently invited me to relevant professional social events. He helped me greatly in my career development and has been a tremendous advocate for my career goals, both for now and in the future. This relationship would not have been possible without the research year, thus the sacrifice of spending additional time in this endeavor resulted in longer-lasting benefits. Further, when I was on neurosurgery sub-internships and residency interviews, my time in Toronto was well regarded and repeatedly brought up as a discussion topic.

After discussing my own research year experience, I would like to highlight certain points that medical students considering a research year should be mindful of in order to make a decision that is ideal for both their personal and career goals. Before deciding to pursue a research year, one may consider how committed they are to neurosurgical research and what role it may play in their future. If one is particularly interested in academic neurosurgery, it can be very beneficial to have the foundation of a research year in medical school to grow from. A research year provides dedicated time, free from the demands of medical school, for the student to pursue scientific interests and focus without restrictions, which in many situations leads to a highly productive experience. The selection of a research mentor is an extremely important and potentially complicated task. Guidance from trusted advisors in seeking out mentors for research can be very beneficial, and I was grateful to Raymond Sawaya MD, FAANS; L. Gerard Toussaint MD, FAANS; and Edjah K. Nduom, MD, for their advice in my own search.

It is also important to personally meet with potential research mentors, see their laboratory and speak with the personnel who you will closely work with. Clearly discussing topics, such as funding options, project goals and your own expectations of what you aim to accomplish during the research year, are crucial to do before committing to a mentor, so that the student can maximize their efforts and avoid disappointment in the future. As is apparent, choosing to spend additional time for this experience can be a cumbersome option for students who have significant family or financial obligations. One way of mitigating these hurdles for those who face them is to consider a research year at one's own home institution. Funding is another key topic that can limit a student. There are a number of grant awards available to medical students for pursuing a research year, such as from the Howard Hughes Medical Institute. The National Institutes of Health also hosts a medical student research year fellowship program. Rarely, students have been able to fund themselves via medical school loans or the research mentor has been blessed with an excess of funding where they can provide a stipend. Planning this year well ahead of time is also crucial. It has also been recognized that a year of research can lead to a difficult transition when returning back to the medical school curriculum, thus it is advised to prepare ahead of time for especially critical rotations such as neurosurgery sub-internships.

Ultimately, a carefully devised research year can be a powerful tool for medical students to develop as future neurosurgeon-scientists, along with potentially building life-long relationships with their mentors, but it is best when planned carefully. This article illustrates the experience of the author and seeks to highlight key information that can help guide medical students interested in neurosurgery in their own decision-making when considering a research year independent of the traditional medical school pedagogy.

Starting a New AANS Medical Student Chapter: How We Did It

Brandon Lucke-Wold, MD, PhD
West Virginia University School of Medicine

Over the past couple of years, student interest has continued to increase for the pursuit of neurosurgery training at West Virginia University. A small group of students began attending neurosurgery grand rounds, working with the faculty and residents on research projects and shadowing in the operating room. Due to this growing interest amongst students, we decided to start the AANS neurosurgery interest group at West Virginia University. We want the group to get more students interested in neurosurgery earlier during medical school, provide opportunities for students to prepare for residency and encourage academic excellence through neurosurgery research. In order to set up the group, we first formed the core group of officers who would spearhead the meetings and activities. This group consisted of MD students and MD/PhD students who were already interested in neurosurgery. The students were from all stages of training including MS1, MS2, MS4 and students in the graduate portion of the MD/PhD program.

After the officers met, we approached the chairman of the department to get his support and also elicit advice on who to choose as a faculty mentor. Our chairman offered his blessing for the group, provided guidance on who to select as a faculty and resident mentor and discussed how to set up a meaningful experience for the students. We immediately approached the faculty and resident mentors and submitted the paperwork to start the chapter to both the AANS as well as our school. Once officially started, we began planning our first meeting and further discussed what we hoped to accomplish with the group. The first meeting was about the ethics of neurosurgery and we hosted a panel of neurosurgery faculty to discuss issues such as death, what to disclose to pediatric patients about their diseases and how to present difficult options to patients.

Going forward, we are working with our faculty mentor to plan monthly meetings, a getting-to-residency boot camp and formalizing a neurosurgery summer internship. We are hosting sessions on neurosurgery as a career, how to apply to residency and GBM patient outcomes. The getting-to-residency boot camp will take place in the spring and include an introduction to the basic techniques used on the floor by neurosurgery residents as well as a suturing workshop and cadaveric simulation. The formalized neurosurgery summer internship will allow students opportunities to round with the team, participate in the OR and work on neurosurgery research projects. We are currently organizing the list of all neurosurgery-related projects so that students can approach faculty to get involved early. Furthermore, we plan to host a monthly journal club to expose students to neurosurgery literature, as well as provide guidance from the faculty/residents who will help facilitate the discussion in terms of research design and outcomes.

Through these activities, it is our hope that more talented students will pursue neurosurgery as a career at our institution. Our goal is to get students in the operating room working with residents and faculty early on through a new internship program. Finally, we want to expand our student presence at national meetings through research presentations to expose them to organized neurosurgery and the opportunities available in the field. By sharing the ideas for the way we have formalized our interest group, it is our wish to inspire other neurosurgery student groups around the nation to implement innovative strategies to continue to recruit and retain the best and brightest medical students to pursue neurosurgery training.

AANS Medical Student Chapters

Chapter Highlight: Johns Hopkins

Since its inception in 2014, the American Association of Neurological Surgeons (AANS) medical student chapter at Johns Hopkins University School of Medicine has remained one of the largest and busiest chapters in the country. With guidance from faculty advisor, Edward S. Ahn, MD, FAANS, the number of total active members has grown to 127 students from across all four years of medical school. Additionally, nearly 40 students regularly attend chapter events and meetings. Five members have matched in neurosurgery residency over the last two years, and an additional four students are applying in the current application cycle.

Chapter activities are ongoing throughout the year with the aim of fostering an interest in neurosurgery throughout medical school. Each year, department chairman Henry Brem, MD, FAANS, presents an "Introduction to Neurosurgery" lecture over dinner with chapter members. Additionally, students meet quarterly for faculty or resident-led journal club sessions focused on a basic science, translational or clinical research question within an area of neurosurgical subspecialty. Chapter members also meet quarterly to hear about the various clinical work being performed by faculty members, such as the pictured "Introduction to Cerebrovascular Neurosurgery" session led by endovascular neurosurgeon Alexander L. Coon, MD, in October 2017.

Mid-year, the chapter holds the Research Opportunities Meeting, during which students are exposed to the work of various labs throughout the department of neurosurgery. Additionally, in the

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spring of each year, the chapter holds a Match Panel, where recently matched fourth year medical students talk about the application, interview and match process. Then, the chapter also coordinates shadowing in the clinic and operating room for first and second year medical students with an early interest in neurosurgery.

The YNC commends the Johns Hopkins University School of Medicine AANS medical student chapter for their outstanding work fostering interest in the field of neurosurgery, and we look forward to welcoming their current student members as resident and young neurosurgeon colleagues in the years ahead!

Raj Mukerjee, MD, MPH
Neurosurgery Skull Base Fellow
University of Pittsburgh Medical Center

Division Updates from the CNS Meeting 2017

Education Committee Update

Shakeel Chowdhry, MD, FAANS

The AANS Scientific Planning Committee (SPC) reviewed the main program and shored up plans for moderators for new slots, including breakfast seminars and dinner symposiums. They are also seeking representatives from all sections to attend SPC meetings to help in planning and information dissemination. The MOC/CME Committee discussed incorporating a program in the main meeting for general neurosurgeons in community practice. They revisited the 20 hr./year CME requirement for all neurosurgeons and opened discussions about courses for advanced practice physical extenders.

The NeuroPoint Alliance (NPA) discussed broadening reach and appeal. Spine and radio surgery have been the most successful modules, and there is interest in revisiting the cranial/tumor module next year. NPA plans to hold a full day course at the 2018 AANS Annual Scientific Meeting entitled "How the NeuroPoint Alliance Will Help Your Practice: Using Registries to Enhance Quality, Reimbursement, Certification and Clinical Research." It is geared towards data coordinators, residents and attending neurosurgeons.

The Education and Practice Management (EPM) Committee plans to adjust offered courses, based on reported needs of neurosurgeons. Coding courses will continue to be offered 4-5 times per year (including weekend coding courses at the national meetings). A new Coding 101 course for junior faculty will be offered annually in August. Attendance at the Weekend Update course dropped following changes to MOC requirements. It will continue to target community-based neurosurgeons requiring CME. The AANS Goodman Oral Board Preparation course format has been adjusted to better reflect recent changes in the oral boards format.

Affiliated Organizations Report

Andrew Carlson, MD, FAANS

The AANS affiliated organizations represent a diverse group of organizations, which the YNC interacts with. These organizations are particularly relevant to socioeconomic, policy and practice based topics.

The Council of State Neurosurgical Societies (CSNS) gives a voice to state and local neurosurgery organizations regarding neurosurgery policy direction. CSNS meeting highlights include discussion regarding management of thoracolumbar transverse process fractures and the role of neuromonitoring in spine surgery. The point was also raised that access to neurosurgical care is a larger issue than patients just having insurance and should be addressed.

The Joint Guidelines Committee had a very productive year for guidelines review. Guidelines reviewed include guidelines for deep brain stimulation for Parkinson's disease, revisions to the Acute Ischemic Stroke and revisions of the management of Metastatic Brain Tumors.

The Political Action Committee (PAC) has been meeting its fundraising goals, but wants to encourage young neurosurgeons to develop habits of routine giving, particularly among leadership. There is a planned happy hour with United States Senator Bill Cassidy at the next AANS meeting.

ThinkFirst, an organization focused on brain injury prevention, has local chapters all over the country and can often play an important role in providing injury prevention resources for trauma programs at hospitals. At the meeting, a new focus for injury prevention in infants was also a highlight of discussion.

Section Updates

Walavan Sivakumar, MD

Cerebrovascular Section: The CV Section has been active with the CAST accreditation process for cerebrovascular fellowships with 36 programs approved. There are plans in place to tie accreditation designation into the credentialing process. Details regarding funding for various resident, fellow and young attending clinical and basic research grants, as well as multiple courses supported by the section, can be found on the joint section website.

Website: http://www.cvsection.org/

History Section: The History Section welcomes young neurosurgeons to get involved in the section by sending new ideas, helping with the annual history video and assisting with planning the next meeting.

Website: http://www.aans.org/en/Membership/AANSCNS-Sections/History-Section

Pain Section: There will be a Pain Section meeting, to be held in conjunction with the Spine Section meeting in 2019, highlighting neuromodulation as a treatment for back pain. The Pain Section has been very active in the AMA opioid task force and is representing neurosurgery interests in new laws. The Pain Section continues to offer the Oakley Fellowship, which supports a two to three month traveling experience to learn neurosurgical pain techniques and/or refine their use. Eligible applicants are residents PGY4 or later or neurosurgeons within two years of finishing residency.

Website: http://painsection.org/

Pediatrics Section: Information regarding research awards for fellows and early career faculty members can be found on the section's website.

Website: http://pedsneurosurgery.org/

Spine Section: The Spine Section will host their annual meeting March 14-17, 2018, in Orlando. The theme is Restoring Alignment in an Era of Global Change. They will continue to utilize the fast-abstract concept. The thoracolumbar trauma guidelines are completed and an update on cervical trauma guidelines are underway.

Website: http://www.spinesection.org/

Stereotactic and Functional Section: The AASFN is forming a young neurosurgeon's subcommittee within the section and is looking for interested members.

Website: http://www.assfn.org/

Trauma Section: The section continues to offer the Codman Resident Neurotrauma Research Award. The section is working with the National Neurotrauma Society on NIH grants aimed at preventing pediatric head trauma. The next AANS/CNS National Neurotrauma Symposium will be held in conjunction with the International Neurotrauma Society August 2018 in Toronto. The thoracolumbar trauma guidelines will have been completed and will be published in Neurosurgery in the coming months. Available fellowship information in Neurotrauma and Critical Care is posted on the website.

Website: http://www.neurotraumasection.org/

Tumor Section: The Young Neurosurgeon Reception at the 2017 CNS Annual Meeting went extremely well. Honored guest and former CNS President Russell Lonser, MD, FAANS, spoke about the current status of funding and shared insights regarding developing a career in tumor research. Information regarding all of the upcoming meetings and funding sources for research grants and fellowships, including the Andrew Parsa fellowship, is posted on the website.

Website: http://www.tumorsection.org/

Women in Neurosurgery (WINS): The first WINS-sponsored annual retreat in Snowbird, Utah, in July went extremely well. The next retreat will occur in conjunction with the Spine Section meeting in March 2018 in Orlando.

Website: http://www.neurosurgerywins.org/

Book Review

Interdisciplinary Management of Orbital Disease

By Hans-Jürgen Welkorborsky, Burkhard Wiechens and Michael L. Hinni

As neurosurgeons, we often interact with orbital pathology. This work, which is presented as a textbook and atlas, centers on diseases of the intra-orbital space, including trauma, inflammatory conditions, tumors, vascular malformations, congenital malformations and many others. The book is very well illustrated, but the opening chapters on orbital anatomy and pathophysiology are particularly useful for neurosurgeons, with excellent figures and anatomical dissections. Although the orbit is not directly addressed in many traditional neurosurgical textbooks, there is great overlap here with neurosurgical disease processes that involve the orbits and optic apparatus, including orbital trauma, craniosynostosis syndromes, tumors of the orbit, optic nerves (i.e. gliomas), optic nerve pathways, tumors of the fronto-orbital skull base (e.g. meningiomas) as well as surgical approaches to the orbit. This is a well-presented overview of the orbit and intra-orbital pathologies and will benefit anyone interested in bettering their understanding of the intersection of the orbits and neurosurgery.