



FAQ for Students Thinking about Neurosurgery

How can high school/college students find mentors early on?

Try reaching out to your local medical school or neurosurgeons. Can't find an email? Students sometimes reach out to our offices just like they'd call to set up an appointment. Look into mentorship programs through organizations like Student National Medical Association, Association of Women's Surgeons, and Women in Neurosurgery.

Networking is key when looking for a mentor or inspiration- always look for someone who has overcome obstacles similar to those that you may face because their advice/guidance regarding how to overcome those situations can be of paramount importance. Some schools (high school, undergraduate or medical) may have a directory of previous alumni who went into neurosurgery and who would be willing to serve as mentors. For those in high school, your school career counselor may be able to contact the relevant individuals. Regarding college students, reaching out to particular student groups or organizations may also help you narrow down your search and find someone willing to take you under their wings. Additionally, seek out professors with training in a relevant discipline (neuroscience, psychology, neurology, etc.)- chances are that they either know someone that they can refer you to or that they can serve as great mentors themselves.

Lastly, you likely need more than one mentor. Some mentors may be incredibly helpful with your research goals for example while others will help you with leadership growth or family planning.

How much does leadership experience influence matching into neurosurgery?

Students that are likely to match into neurosurgery have demonstrated they can lead and take on challenges. This can look like formal leadership training or leadership experience in your personal or community life.

Leadership is very important in your path to becoming a neurosurgeon. As a professional, you will need to put into practice the leadership skills that you have acquired throughout the years to guide your team through very complex and difficult procedures. This is not a skilled learned overnight and you will have to spend years practicing how to be an effective leader. As such, it is imperative that you place yourself in such a role as often as possible- you will find that even taking the lead on a simple project will help you engage with the many intricacies that are involved in leadership. If no prominent leadership opportunities exist at your institution- create one! Creativity and flexibility are important traits to develop as well. A good neurosurgeon is not only skilled in clinical/surgical practice but has also spent years refining these often-



overlooked qualities. Seek out qualities of a good neurosurgeon/physician and work on defining and refining these within yourself.

How can medical students from underrepresented backgrounds learn to cope with/respond to microaggressions in the clinical setting?

Organized neurosurgery is eager to embrace students from underrepresented backgrounds and students from all backgrounds should know they are highly valued by the specialty. That being said, microaggressions are a reality of the experience. We suggest having formal resources like mental health providers and outlets for stress but also informal resources such as support from mentors, friends, and family. We encourage students to continually engage with their long-term goals to not let these microaggressions distract them from future success.

This is a very important topic and should not be taken lightly! Microaggressions such as these take a very hefty psychological toll and need to be acknowledged. Those who are the target of these aggressions should find allies on whom they can rely for emotional and social support. These individuals can include classmates, professors, clinicians, mentors, mental health advisors and family members. Creating a strong support system is integral to not allowing these unfortunate circumstances from impacting your progress. For those who are not being directly impacted by microaggressions, it is imperative that you stand up for those who are being affected- express your support and engage in activities that change the clinical atmosphere for the better. We are all part of the same team and if one of us is psychologically suffering then the rest of us will ultimately suffer as well.

It is critical to note that none of these behaviors are acceptable in neurosurgery and events that go to to the point of harassment or discrimination should be reported through proper institutional channels. Organized neurosurgery is committed to diversity, equity, and inclusion and ensuring trainees and providers a safe experience without fear of retaliation.

How can medical students from institutions without a home program get connected to opportunities in medical school?

There are opportunities to do research or volunteer at organizations with a neurosurgeon. Contacting Women in Neurosurgery (WINS) is one way to find opportunities. Additionally, if you are looking for a research opportunity at a program other than your own, there are programs at the NIH as well as grant funding for research for women and trainees of color (<https://grants.nih.gov/grants/guide/pa-files/pa-20-222.html>). These are things to think about particularly as you plan for your research year in medical school should you decide to take an additional year or for



summer research. You can also do a visiting rotation and many institutions have scholarships for visiting students of color.

Reaching out to medical schools to directly inquire about opportunities can also prove to be fruitful- there are often unadvertised opportunities that exist and can be discovered via this pathway. The same goes for contacting multiple research labs and asking if there are any opportunities. The NIH IRTA program is an excellent way to gain exposure to research and the website also has great tips to how to apply (I highly recommend using this resource even if you are not going to apply to programs at the NIH).

If a resident is concerned about their progression/performance in residency, how can they go about seeking guidance?

Seek feedback early! Think about how you are seeking feedback and make sure you are being a “good mentee” by seeking out feedback and embracing it to make yourself better. Find someone in your program ahead of you that is successful and emulate them and ask them for advice. Do not be afraid to ask your mentor or program leadership for help.

What are career options in neurosurgery post-residency?

When this is all over, you will get a job! There are options in neurosurgery to work as a professor at an academic hospital where you can also teach or do research, work at a private hospital, some combination of the two, or take on a leadership or industry role.

There are also many different sub-specialties that you can go into. Some of these include: Cranial, spinal, trauma, pediatric, functional and vascular neurosurgery. The world of neurosurgery is vast and many parts are yet unexplored- maybe you can be the pioneer of those fields!

What are some emerging treatments and research topics in the field of neuroscience and neurosurgery?

There are so many in all of the fields of neurosurgery. A good resource to read is the Journal of Neurosurgery and Neurosurgery (Red) Journal.

We are currently at the forefront of discovering how the brain works and how best we can treat neurological diseases. New technological advancements have made this possible! Some interesting research topics include: finding curative treatments for neurodegenerative and psychiatric disorders, addressing problems such as phantom pain experienced by amputees, delivery of pharmaceuticals to certain areas of the brain, and preventing/treating traumatic brain injuries. Furthermore, many studies are



currently working on understanding the underlying structure and physiology of the brain. A simple search in google scholar can yield many results of recent publications. Refer to the “Future Directions” section of those papers as they can often guide you towards a project idea.

For more information regarding the recent advancements that have been made in neurosurgery, please refer to this article:

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1114533/>

How manageable is raising a family and maintaining a work/life balance in neurosurgery?

There are many individuals in neurosurgery with families that make it work. Perfect balance is really hard but happiness is achievable and involves setting realistic expectations and asking for help!

Is it possible to spend time outside of the hospital pursuing other clinical/research interests?

Yes, both possible and expected. Find things that you are passionate about and explore them. Start early learning to manage and balance your time but also say no if you have too much on your plate.

Balance is very important! Please do not disregard the psychological havoc that burnout can wreak on your daily activities and progress. Take care of your mental and physical health above all- the training to becoming a neurosurgeon is very long and to get there you need to have endurance and consistency necessary to handle this rigorous training. Always prioritize yourself!

What are some ways for high school and undergraduate students to get involved in the field?

Join organizations and mentorship programs through Student National Medical Association, Women in Neurosurgery, and Association of Women Surgeons. Volunteer at your local hospital or clinic. Reach out to neurosurgeons and residents to hear what they do. Remember neurosurgeons are very busy so don't be discouraged if you don't hear back right away.

How much weight is given to the applicant's number of publications when matching into neurosurgery?

It is important to show a track record of academic success i.e. publications and presentations to get into neurosurgery. Find mentors who have a good track record of



helping students achieve these goals. Remember though that sheer number of publications is not crucial, rather demonstration of an area of interest/passion.

What should women looking to pursue a career in neurosurgery expect (culture, treatment from male colleagues, equal pay, maternity leave, etc.)?

The number of women in neurosurgery is rising as are women in leadership positions. Women in neurosurgery should expect great training, careers, and opportunities. Family planning is part of a career trajectory and should reflect the policies of the institution. Additionally, mentor and leadership support of family is appropriate. Mentorship is encouraged during the negotiation process to ensure appropriate compensation.

What are small details that medical students should look for in neurosurgery residency programs?

Look for a program where you like the people and feel you will have supportive mentors. Look for opportunities to learn and grow in the operating room and for your interests outside. Keep in mind things like location, family, cost of living, etc.

The workload is also another important aspect of the program- some neurosurgery residencies are extremely rigorous and will require you to take on a lot of responsibilities (and work very long hours). Others are not this way and will allow for more flexibility regarding your time outside of your job. Select a program that best matches your personal and career goals. More rigorous programs allow for numerous learning opportunities but do not leave room for pursuing extracurricular research endeavors, for example. Also, pay close attention to the retention rate of a particular program- if it is low, then that could signal problems with the training program. Do your research by speaking to your mentors and upperclassman about their impressions of the different programs. Online forums and Student Doctor Network might also provide some clues- although, take this information with a grain of salt as it could be biased. Additionally, schools often hold open houses during which they discuss their residency program- it might be good to attend and listen for what they often look for in their applicants. Finally, attend talks that invite residency program directors- they can speak directly about the program and answer any questions that you may have about it.