Residency Redesign

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Over the past two years, there have been serious discussions about whether to redesign the neurosurgery residency to bring it into alignment with changes in American health care. I would like to discuss the background of this issue and give you my view of where we are headed.

Why now? Although the details of residency training have always been altered and adjusted, why is organized neurosurgery reevaluating the entire framework of our training system? I believe that the following changes and trends serve as the impetus for the current concerns.

1. Work hour restrictions to 80 hours per week have greatly altered the workforce available in every training program.
2. Other surgical specialties, such as orthopaedics, have gained control of postgraduate year (PGY) 1.
3. There is much more external accountability to and compliance with groups such as the Accreditation Council for Graduate Medical Education, but also state and federal regulatory agencies.
4. There is a much improved ability to share data and information.
5. There is a sizable trend toward subspecialization in neurosurgery.
6. Last, but not least, there is a very real need to recruit more women to neurosurgery.

Given these concerns, I believe that we need to address the following issues.

1. What can be done to improve PGY 1?
2. Should the length of training and the content of training be changed? Do we need a curriculum for residency programs?
3. Should subspecialty training, i.e., fellowships, be part of residency training?
4. Where does research fit in?
5. Should there be better organization and uniformity of training programs across the country?
6. How do we attract more quality women to neurosurgery?

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What groups are involved in this process? They are the usual suspects, but with changing roles.

The American Board of Neurological Surgery (ABNS) remains very concerned about the quality and content of residency programs and has devoted its entire winter 2009 meeting to this issue.

The Residency Review Committee for Neurosurgery, which is part of the Accreditation Council for Graduate Medical Education is very interested in quality and uniformity in programs.

The Society of Neurological Surgeons, the senior society, now includes all department chairs and program directors. The Society of Neurological Surgeons started the Committee on Accreditation of Subspecialty Training in 2001. This committee serves the increasingly important role of setting the standards for fellowships in neurosurgery. It does not provide certification for those completing fellowships, but does recognize and accredit those programs that meet their quality standards.

Our educational organizations, such at the Congress of Neurological Surgeons and the American Association of Neurological Surgeons (AANS), are very interested in the content and design of residency training programs.

Last, the Washington Committee has interest and input into residency issues.

An educational summit was organized last year by Dr. John Popp to get the leaders of these groups together to take a careful look at residency training issues. This group met twice in 2007 and once so far in 2008. The Educational Summit has focused on the following five issues: (1) complete control of PGY 1 training; (2) length of residency training; (3) identification of a core curriculum, including issues of generalist versus subspecialist training and the varying size and scope of training programs; (4) development of a strategy for research; (5) critical evaluation of the match program and the possibility of subspecialty matches.

The first issue has already been solved. A letter from Ralph Dacey, the Chairman of the Residency Review Committee, was sent to all program directors on July 31, 2008, announcing that neurosurgery has succeeded in gaining control of PGY 1. This will commence in July 2009.

What about the length of training? In 1940, the ABNS was formed and set the national standard for training at one year

of internship and three years of neurosurgery. In 1955, the standard was reset to one year of internship and four years of neurosurgery. Given the ever-expanding complexities of neurosurgery, in 1979, the requirement was expanded to one year of internship and 5 years of neurosurgery, with the requirement of three months of neurology. With control of PGY 1, in 2009, this will become an all-inclusive six years of neurosurgery rather than one and five. PGY 1 will include a maximum of 6 months of neurosurgery and three months of fundamental skills and may include three months of neurology.

The new six-year format will look something like this:

- PGY 1: Fundamental clinical skills
- PGY 2: Core neurosurgical training
- PGY 3: Core neurosurgical training
- PGY 4: Elective/research
- PGY 5: Focused training (clinical or research)
- PGY 6: Chief residency

It is my belief that we should *not* reduce the length of training, but rather improve the quality of the content. The reasons not to shorten the training period include the continued growth of material to learn, the limitation of clinical experience by work hour restrictions and the need to continue meaningful research by residents.

I believe that the last year of residency should be *different* from the rest. We should fight for unrestricted work hours for the chief residents. They should function like practicing neurosurgeons and should provide absolute continuity of care for their patients. They should have some degree of administrative responsibility.

There should be a core curriculum that is common to all training programs. It should be dynamic and expanding and should include procedural as well as cognitive content. Ideally, advancement should be criteria based and not just time based.

A good definition of core knowledge is what your partner in a multidisciplinary practice needs to know to make you comfortable when he or she is on call covering your patients.

I believe that there should be opportunities for special-interest training during residency. This may be called advanced clinical training or an enfolded fellowship, but this may also be advanced research training.

The advantages of enfolding advanced clinical training into the residency include shortening the overall time to acquire a special skill, allowing the time in training to be tailored to a special interest, and allowing research contributions to begin sooner.

The potential disadvantages include a narrowed view of our specialty and replacement of more basic research skills. Enfolding advanced training requires an early and clear focus of interest; however, the individual is less neurosurgically "mature" during this experience.

Clearly, the appropriateness of enfolding subspecialty training should be individualized to the interest and abilities of the resident and to the type of training desired. I believe that future cerebrovascular neurosurgeons will need to be fully trained in endovascular techniques, and I see no reason why these skills cannot be acquired during six or seven years of residency training. One of our current residents with a strong and early interest in cerebrovascular neurosurgery was able to do 125 catheter cases at our institution by his PGY 4 and then 489 endovascular cases at another institution during his PGY 5. He will be a fully trained cerebrovascular neurosurgeon by the time he finishes our program. Other residents have spent as long as two years doing focused bench research, in some cases leading to a Ph.D. degree.

It is important to realize that most subspecialty training in neurosurgery will not lead to certification. The only exception to this is pediatric neurosurgery training, which is certified by the American Board of Pediatric Neurological Surgery. This board is not officially related to the ABNS and is not a member of the American Board of Medical Specialties, but does an excellent and high-quality job of setting standards for pediatric neurosurgery.

Other than pediatric neurosurgery, there is no official recognition or certification of subspecialty training. As Tip O'Neil once said, "All politics is local." Ultimately, it is up to your local hospital and colleagues to recognize your extra efforts at advanced clinical training. The ABNS has, after a great deal of thought and discussion, stayed away from subspecialty certification in an effort to allow all board-certified neurosurgeons the ability to practice the entire breadth of neurosurgery.

The Society of Neurological Surgeons has helped to fill this void in recognition by setting quality standards for fellowships through the Committee on Accreditation of Subspecialty Training. They do not provide certification for individuals, but they do accredit fellowships that meet a high standard. They are doing a wonderful job with this effort.

The Society of Neurological Surgeons has also taken the lead in providing a "tool kit" to program directors to help ensure quality and uniformity to programs of all sizes and composition. This tool kit can be found on the Society's website and includes information on the core curriculum from the Congress of Neurological Surgeons (CNS), sources for research funding, policies of the Accreditation Council for Graduate Medical Education and ABNS, data collection requirements, evaluation tools, and much more.

There continue to be very serious efforts to keep our research goals clear. Neurosurgery remains unique in residency training in that it continues to provide a meaningful research experience. A meeting was held in St. Louis in October 2007 to develop a research agenda for neurosurgery. This was sponsored by the CNS and the AANS and was designed to develop a research priority agenda for National Institute of Neurological Disorders of the National Institutes of Health. Twenty-four distinguished researchers, mostly

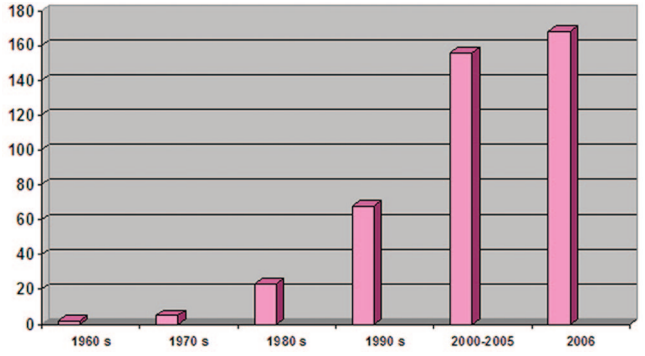

FIGURE 12.1. The number of American Board of Neurological Surgery–certified women in neurosurgery.

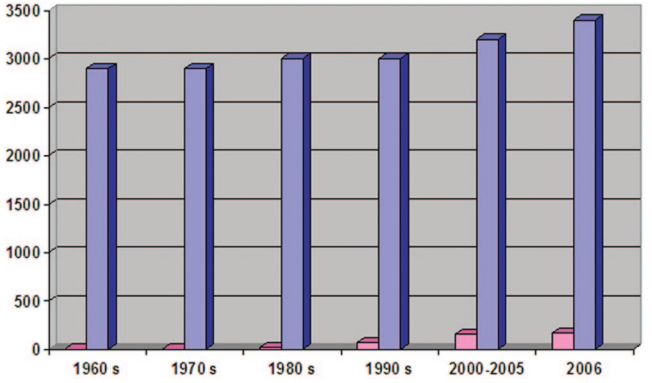

FIGURE 12.2. The total number of American Board of Neurological Surgery (ABNS)–certified neurosurgeons (columns on right) and the number of ABNS-certified women neurosurgeons (columns on left).

neurosurgeons, were invited to participate. The research accomplishments and needs of the various subspecialty areas were considered, and a lengthy agenda was generated. This will be used to guide funding from the National Institutes of Health.

Last, but surely not least, how do we attract more women to neurosurgery?

We know that 55% of medical students are women, but only 10% of neurosurgery residents are women. This has been stable since 1998 and includes only one fifth of 1% of women resident applicants. Just 6% of academic neurosurgeons are women with only one departmental chairperson. Only 4.6% of private practice neurosurgeons are women.

Ruth Kerr-Jakoby was the first woman to be certified by the ABNS in 1961. *Figure 12.1* shows that when you start with none in 1960, the increase in the number of board-certified women neurosurgeons is dramatic.

However, when you look at the number of women in relation to the total number of neurosurgeons (*Fig. 12.2*, it does not look that encouraging.

A white paper on this important topic was published in the *Journal of Neurosurgery* in September 2008, written by 12 prominent women neurosurgeons at the request of the Board of Directors of the ABNS.[1]

This article points out that there is an absence of a critical mass of women in American neurosurgery. The authors state that you need to be at least 15% of a group to be a minority. Less than that and you function as individuals, leading to a feeling of isolation. The authors believe that there is a lack of exposure to women neurosurgeons by medical students. There is clearly a lack of female role models and mentors. There continue to be gender inequities in the workplace, with barriers existing both in academic and community practice.

The authors have several suggestions to improve the situation for women in neurosurgery. We need to characterize the barriers and identify and eliminate discriminatory practices. We need to promote women to leadership roles and foster female neurosurgery role models and mentors. We need to provide an early and continuous exposure of all medical students to neurosurgery.

I am proud of our history of women in neurosurgery at the University of Michigan. Carol Miller came from Ohio State in 1972 and, I am proud to say, was one of our faculty during my training. Joan Venes joined our faculty in 1982 as our first pediatric neurosurgeon. Carol and Joan were truly pioneers who paved the way for women like Karin Muraszko, who joined our faculty in 1990. Karin has gone on to become the Chair of the Department of Neurosurgery and the first Julian T. Hoff Professor of neurosurgery. In 2005, Karin was the first woman to become chairperson of an American department of neurosurgery. This year, she joins the ABNS as the first woman director. I also want to recognize the women who have trained or are in training at Michigan: Carol Geer, Judy Gorelick, Lynda Yang, Sonia Eden, Emily Lehmann, and Jennifer Strahle.

I believe that to improve the situation for women in neurosurgery we need to do a number of things. We need to make residency training and practice attractive to women, with zero tolerance for gender inequities.

We need to support changing lifestyles of both men and women. We need to give appropriate time off for maternity leave and consider creating part-time and shared practices. To develop creative practice opportunities, we need to solve the malpractice issue. Men need to step up and recruit women into residency training, into practice, and into leadership roles.

In summary, I believe that our residents and training programs command respect and admiration at every institution. We only need to keep up with the changing trends and realities of medicine. Along with adapting to changing lifestyles, we need to maintain a research component in our training programs.

Our residents and training programs are, indeed, the "pride of neurosurgery."

Disclosure

The author has no personal financial or institutional interest in any of the drugs, materials, or devices described in this article.

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