

International Issues: Obtaining an adult neurology residency position in the United States

An overview

Justin T. Jordan, MD*
Johann Sellner, MD*
Walter Struhal, MD
Logan Schneider, MD
David Mayans, MD

Correspondence to
Dr. Jordan:
jtjordan@partners.org

Around the world, there are marked differences in neurology training, including training duration and degree of specialization. In the United States, adult neurology residency is composed of 1 year of internal medicine training (preliminary year) and 3 years of neurology-specific training. Child neurology, which is not the focus of this article, is 2 years of pediatrics and 3 years of neurology training. The route to adult neurology residency training in the United States is standardized and is similar to most other US specialties. Whereas US medical graduates often receive stepwise guidance from their medical school regarding application for residency training, international graduates often enter this complex process with little or no such assistance. Despite this discrepancy, about 10%–15% of residency positions in the United States are filled by international medical graduates.^{1,2} In adult neurology specifically, 35% of matched positions were filled by international graduates in 2013, 75% of whom were not US citizens.¹ In an effort to provide a preliminary understanding of the application process and related terminology (table 1) and thereby encourage international residency applicants, we describe the steps necessary to apply for neurology residency in the United States.

To begin the application process, interested individuals first determine the residency programs to which they will apply. Of note, it is possible to apply for both US and foreign residencies if desired. Research regarding US programs is commonly performed with the Fellowship and Residency Electronic Interactive Database (FREIDA),³ which is maintained by the American Medical Association and data from individual residency programs. In this database, one can find information regarding training environment, program size, salary, and much more. Most programs also have separate Web sites with additional information. One important detail to consider is whether a program is categorical (meaning all 4 years are included in the position) or advanced (meaning only the last 3 years of neurology training are

included and the applicant would need to apply separately for intern programs). In the case of advanced programs, applicants may also use FREIDA to search for intern years, which are traditionally completed through internal medicine preliminary programs in order to ensure completion of requisite rotations for neurology board certification.⁴ Presently, there are 130 accredited neurology residency programs,³ including both categorical and advanced positions, upon whose successful completion a graduate is eligible for board certification with the American Board of Psychiatry and Neurology.⁴

Next, an applicant begins work with the Electronic Residency Application Service (ERAS), which is a standardized residency application developed to simplify the process of applying to multiple institutions.⁵ ERAS officially opens on July 1 of each year, when applicants may first begin to enter their personal information and upload supporting documents (figure). These documents include items such as a personal statement and photograph, letters of recommendation, a letter from the dean of the applicant's medical school (known as the medical school performance evaluation), medical school transcripts, and examination transcripts including United States Medical Licensing Exams (USMLE) Step 1, Step 2-CS, and Step 2-CK.⁵ In the case of foreign medical graduates, the Educational Commission on Foreign Medical Graduates serves as a clearinghouse for primary source verification in order to facilitate applications and provides a required certification prior to finalizing ERAS.⁶ An additional consideration for foreign medical graduates is securing a visa for entering and working in the United States. Most often, medical residents receive a J-1 or H-1 visa sponsored by individual hospitals,⁶ though this availability should be verified during the application process. Applications are held privately on the ERAS database while applicants submit documentation and choose the programs to which they will apply, including both neurology programs and intern year positions.

*These authors contributed equally to this work.

From the Department of Neurology, Division of Neuro-Oncology (J.T.J.), Massachusetts General Hospital, Boston; Department of Neurology (J.S.), Christian-Doppler-Klinik, Paracelsus Medical University, Salzburg, Austria; Department of Neurology (J.S.), Klinikum rechts der Isar, Technische Universität München, Germany; Department of Neurology (W.S.), General Hospital of the City of Linz, Austria; Department of Neurology (L.S.), The Johns Hopkins Hospital, Baltimore, MD; and Neurology Consultants of Kansas (D.M.), Wichita, KS.

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Supplemental data
at Neurology.org

Table 1 Commonly encountered terms in applying for residency positions in the United States

Term	Description
Intern	A medical school graduate in the first year of a postgraduate clinical training program
Resident	A medical doctor enrolled in a training program within a certain specialty (e.g., neurology)
Fellow	A medical doctor who has completed residency training and is undergoing training for a subspecialty (e.g., neuromuscular fellowship)
Attending physician	A medical doctor who is board-certified in a specialty and is ultimately responsible for directing patient care; serves as the ultimate supervisor for interns, residents, and fellows
Program director	The faculty physician responsible for the overall conduct of and recruitment for a residency program in a given discipline
Program coordinator	The individual responsible for management of residency programs whose tasks include but are not limited to program accreditation, interview scheduling, hospital credentialing, and payroll
Rank order list	A formalized declaration of preference regarding favored residency training programs into which an applicant wishes to enter; residency program directors enter a similar list, both of which are used in the match (see below)
NRMP/match	The National Resident Matching Program (NRMP) is a nonprofit, nongovernmental organization that provides a venue for matching applicants to residency positions on a uniform date by using rank order lists and an impartial computer algorithm; couples may submit joint preference lists
ERAS	The Electronic Residency Application Service (ERAS) transmits applications, letters of recommendation, medical school transcripts, and other supporting credentials from applicants to residency program directors
FREIDA	The Fellowship and Residency Electronic Interactive Database (FREIDA) is an online database of all accredited graduate medical education programs in the United States
Categorical vs advanced program	Categorical residency programs encompass all years of residency training in a given specialty, including an intern year; advanced programs include specialty training only, to begin upon completion of an unaffiliated intern year
Preliminary position/year	One year of training in a prerequisite area of medicine prior to specialty training; traditional preliminary years include internal medicine and surgery
Supplemental offer and acceptance program/scramble	The process through which unmatched applicants apply for and match into unfilled residency positions to which they did not previously apply

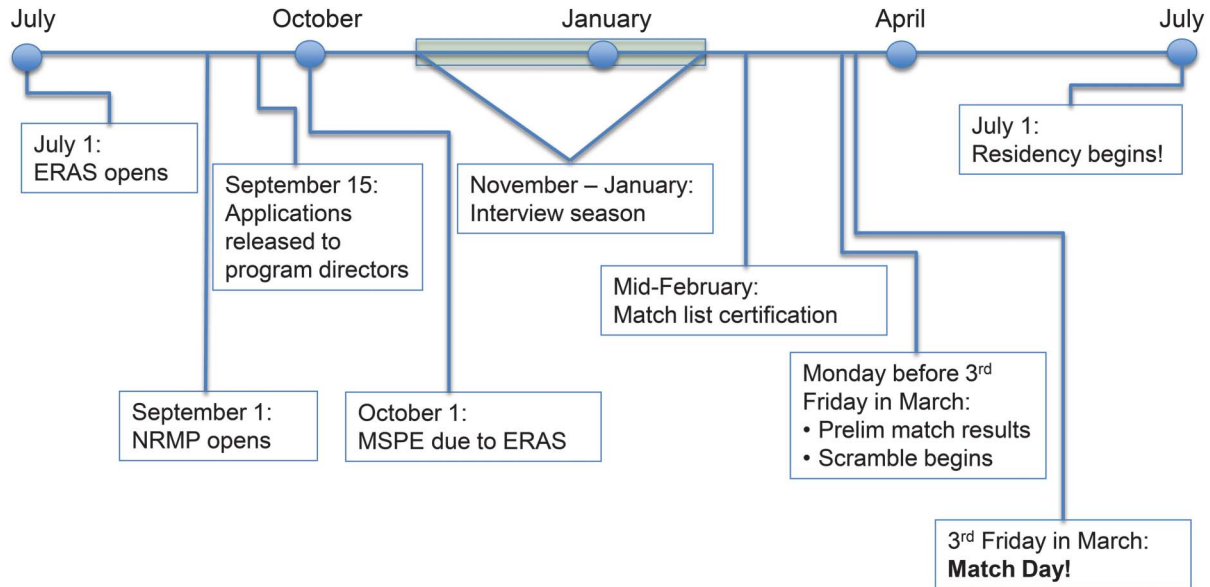
Then, on September 15 of each year, applicants release their information for dissemination to programs, at which point residency program directors first have the opportunity to view applications.⁷ Within a matter of weeks, program directors choose applicants whom they would like to interview for potential residency positions and send electronic invitations via the ERAS Post Office. According to a 2009 survey, when selecting potential residents, US neurology program directors placed greatest emphasis on recommendation letters, USMLE scores, medical school grades, and performance in clinical electives.²

Interviews begin in early November and last until mid-January. The number of interviews an applicant attends varies greatly, averaging 8–12 programs for US graduates and more for foreign medical graduates. Interviews are typically scheduled about once per week at individual programs and include 5–10 applicants per session. Traditionally, applicants come the evening before their interview for an informal dinner with current residents in the program, as well as other interviewees. After dinner, programs may provide transportation to a local hotel and cover the cost of one night's hotel stay. The following day, interviews last about 30 minutes each and occur 2–6 times over the course of the day with different faculty members. For more information on interviews, see table e-1 on the *Neurology*[®] Web site at Neurology.org. Most interview days end around 4:00 PM so that applicants may take a flight home that evening. It is

important for the interviewee to be honest with faculty about desires, though it is against the rules of the match to promise any rank list position to a program.⁸ Further, no program participating in the match may provide a contract to an applicant outside of the match.⁸

As interviews take place, applicants begin to rank the residency programs into which they would most like to enter, considering items such as hospital facilities, didactic quality, research opportunities, resident interrelations, faculty personalities and mentorship, and location. After the interview season, The National Resident Matching Program (NRMP), colloquially known as “the match,” is the official program into which rank information will be entered. The NRMP, whose standard registration is open September 1 through November 30 each year, is a program into which applicants enter their personal rank list of residency programs in the order of their most highly sought position to their least preferred. This is performed for neurology residency positions and, in the case that any of these are advanced programs, a separate rank list should be entered for intern positions. Concurrently, each residency program enters a similar rank list of applicants. The dates vary slightly from year to year, but typically rank lists are available to be changed on an unlimited basis from January 15 to mid-February.⁷ It is important to review the official NRMP schedule, as there is a date by which applicants and programs must certify their final lists in order to qualify for the match. Next, the NRMP employs a computerized algorithm that

Figure Timeline of important dates for residency application process



ERAS = Electronic Residency Application Service; MSPE = Medical School Performance Evaluation; NRMP = National Resident Matching Program; Prelim = Preliminary.

matches each individual applicant with one neurology residency spot, giving favor to the rank list of both parties.⁹ Note that if any advanced position is on an applicant's rank list, it is imperative that a separate intern year rank list is entered, as there will be no post-match option to apply for intern years. In the registration process, applicants may also sign up to "couple match," which is a separate algorithm, most commonly used for married co-applicants, even in separate specialties, that uses both applicants' rank lists to provide a match for both in the same geographic location.¹⁰

About 1 month after rank lists are finalized, the results of the match are released in a stepwise fashion. First, on the Monday before the third Friday in March, individuals are given information about whether they matched to a program—not the name or location of the program.⁷ On the same day, programs find out whether they matched all of their potential residency spots. If an applicant does not match into any program, he or she can then enter the "scramble." The "scramble," now known as the Supplemental Offer and Acceptance Program, is a program performed exclusively through ERAS in which an applicant may apply for and match into an unfilled position at a program to which he or she did not previously apply.⁸ This process occurs over a 4-day period. Finally, all programs and all applicants find out their matches on the same day, the third Friday in March.⁷

For the 2013 match, there were a total of 162 neurology programs participating in ERAS (including both advanced and categorical) and 665 newly

matched neurology residents, of whom 236 were foreign medical graduates, nearly 75% non-US citizen.¹ Neurology applications for the 2013 match included 374 US senior medical students, accounting for 1.5% of graduating US medical student applications, and 906 total applications, accounting for 1.7% of all residency applications.¹ Of all US medical graduates in 2013, about half matched their first choice, and only 3% were left unmatched to a residency position.¹ Independent applicants, including foreign medical graduates, matched their first choice one-quarter of the time, and about 44% were left unmatched.¹ As of 2011, the last year for which FREIDA provides data, there were a total of 2,008 current neurology residents or fellows, of whom 44.2% were female and 40.3% were foreign medical graduates.³ The average trainee salary at that time was \$49,635 USD.³

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