# ERAS and the NRMP and Their Roles in Residency Recruitment—A Primer for Surgical Program Directors

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The process of residency recruitment involves medical schools, training programs, and applicants. These 3 constituencies collaborate through 2 nonprofit organizations—Electronic Residency Application Service and the National Resident Match Program. An overview of both organizations and their functions is presented to help surgical training directors better understand the roles of these 2 important stakeholders in recruitment. (J Surg Ed 76:1163–1166. © 2019 Association of Program Directors in Surgery. Published by Elsevier Inc. All rights reserved.)

Every year, thousands of applicants and hundreds of medical schools and training programs devote considerable resources to surgical residency recruitment. The process remains quite inefficient. In general surgery, most programs receive thousands of applications for few positions. In 2018, 4,262 unique applications were submitted through the Electronic Residency Application Service (ERAS®) for surgical residency positions. Of these, 2,391 applicants underwent interviews and subsequently submitted National Resident Match Program (NRMP) ranks for 1,319 positions at 281 programs.

There remains misunderstanding of the interface between ERAS and the NRMP, and their separate roles within the residency recruitment process. For many years, each organization has published data about applicants. More recently, each has also introduced prospective prognostic tools to help and guide applicants in the residency recruitment process. The purpose of this manuscript is to clarify their respective roles and highlight some of the recent developments in aggregation of recruitment data.

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## OVERVIEW OF THE GOVERNING BODIES IN RESIDENCY RECRUITMENT

### ERAS

In 1996, the Association of American Medical Colleges (AAMC), a private nonprofit organization, launched the ERAS as a 501c3 nonprofit organization to streamline the residency application process which had previously been a paper-based system. Since then, ERAS has expanded to cover 4,887 residencies and fellowships in 77 specialties. As an application service, ERAS currently supports approximately 30,000 residency program users, 61,000 applicants, 103,000 letters of recommendation, and 500 medical school representatives. ERAS serves four constituencies—applicants, medical schools, training programs, and LoR Authors. ERAS semiannually convenes an advisory council comprising important stakeholders from graduate medical education (GME).

ERAS charges applicants for access in a tiered system that is designed to discourage higher numbers of applications. For applicants, 10 applications are included in the initial $99 fee. The 11th to 20th applications cost $14 each, the 21st to 30th cost $18 each, and each application over 31 costs $26 each. As an example, an applicant who submits 30 applications would be assessed a $419 fee. In addition, a yearly $80 fee is assessed for a United States Medical Licensing Examination (USMLE) or COMLEX transcript, regardless of the number of applications. Training hospitals with ACGME-accredited programs and medical schools incur no charges to use ERAS.

The primary function of ERAS is as a document service. Applicants use ERAS to complete their MyERAS application and personal statement(s); Medical schools use ERAS to upload transcripts and Medical Student Performance Evaluations (MSPEs); and LoR Authors use

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ERAS to upload letters of recommendation Programs, in turn, can review these documents through ERAS.

The secondary function of ERAS, debuted in 2014, is to allow programs and applicants to communicate within the portal. This communication has subsequently expanded to include coordination of interview dates with an interview scheduler function. Once an applicant has completed an interview, notes, and scores can be directly transcribed into ERAS by programs.[1]

## NRMP

NRMP is also a private, nonprofit organization created in 1952. Its principal mission is to place GME applicants into training programs. While ERAS serves as a document aggregator to facilitate applications and interviews, it is the NRMP that actually executes the matching algorithm to place trainees into programs. The annual Main Residency Match services over 43,000 applicants and 31,000 positions. Sixty fellowship-level specialties are also serviced by the Specialties Matching Service. The NRMP is governed by a Board of Directors that includes medical school deans, teaching hospital executives, GME program directors, medical students and residents, and 1 public member.[2]

The NRMP also charges applicants fees in a tiered system.[3] The standard registration fee is $85, which includes the listing of up to 20 unique program codes on the primary rank order list. For each program code ranked over 20, NRMP charges an extra rank fee of $30 per program code up to the maximum of 300 ranks. There are additional fees for rank order lists with 100 or more ranks, ranging from $50 to $200. An applicant who submits 30 ranks would be charged $385. Institutions are charged $250, with an additional $60 per program track and $60 per applicant matched to the program.

## RETROSPECTIVE DATA AVAILABLE FOR APPLICANTS, SCHOOLS, AND PROGRAMS

ERAS generates annual data about applicants' metrics. This report includes 5 years' worth of data in its "Historical Specialty Specific Data" report.[4] This includes type of school, gender, racial/ethnic identity, and *Alpha Omega Alpha* status. The Association of American Medical Colleges produces an annual "Report on Residents"[5] which includes additional data including Medical College Admission Test and USMLE profiles of active first-year residents. It also produces several other reports about physicians who have completed their residency training including information about working in underserved areas, retention of physicians in the states of their training, and appointment to medical school faculties.

**TABLE 1.** Data Collected by the NRMP

| |
|---|
| Preferred specialty |
| Match year |
| Applicant type |
| Number of contiguous ranks |
| Number of specialties ranked |
| Number of research experiences |
| Number of publications |
| Number of work experiences |
| Number of volunteer experiences |
| Having a PhD degree |
| Having another graduate degree |
| *AOA* honor society membership |
| USMLE Step 1 |
| USMLE Step 2 |
| COMLEX 1 |
| COMLEX 2 |

The NRMP separately queries applicants upon registration about their standardized scores, work/research/volunteer experiences, and education background, and then provides annual analysis of all participants in the Match including program fill rates and applicant trends. Additionally, the data points in Table 1 are analyzed for each specialty.

## PROSPECTIVE DATA AVAILABLE FOR APPLICANTS

(A) In the last year, both the AAMC and the NRMP have introduced prognostic tools to help guide applicants. The AAMC has pioneered a tool called "Apply Smart."[6] Using the type of applicant (US-MD, US-DO, US-IMG, and FMG), this tool can predict the marginal point of diminishing returns. In other words, this represents the point at which the value of submitting 1 additional application is reduced compared to the value added by each application. This point is different for each group (Table 2).

It should be noted that submitting applications at the marginal point of diminishing returns does not in any way guarantee success in the Match. The purpose of this tool is to encourage applicants to submit the most appropriate number of applications to maximize their chance of success in the recruitment process. This tool has shown that overall, all applicants (regardless of type of medical school) tend to apply below their marginal

[1] https://higherlogicdownload.s3.amazonaws.com/AAMC/c040ef61-b87b-40b4-a4e7-7e17abb38582/UploadedFiles/5kqTppDScOKC6DBeGG17_Applications-%20Entering%20Interviewer%20Comments%20and%20Scores.pdf.

[2] http://www.nrmp.org/about-nrmp/.

[3] http://www.nrmp.org/match-fees/.

[4] https://www.aamc.org/services/eras/stats/359278/stats.html.

[5] https://www.aamc.org/data/484710/report-on-residents.html.

[6] https://www.aamc.org/cim/480042/applysmartgs.html.

**TABLE 2.** ERAS "Apply Smart" Data

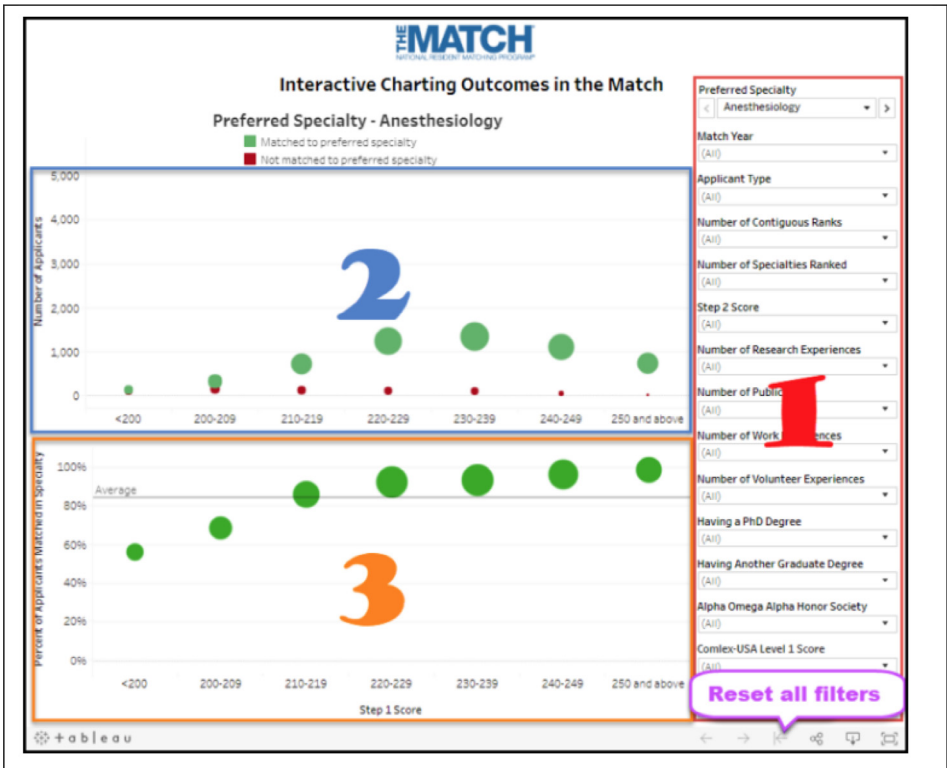
| Type of Applicant | Median Number of Applications | Marginal Point of Diminishing Returns |
|---|---|---|
| US-MD | 26 | 39 |
| US-DO | 16 | 59 |
| US-IMG | 15 | 103 |
| FMG | 21 | 119 |

point of diminishing returns, and that this trend is amplified in applicants with lower USMLE scores.

(B) The NRMP has recently a launched a tool called "Interactive Charting Outcomes in the Match."[7] Using the attributes in Table 1, an NRMP applicant can input his/her data and be given comparative data on Match success customized to his/her own application profile. This tool allows applicants to identify a specialty of interest, specify a range of Match years, and enter characteristics using a variety of filters. The tool presents the data based on the numbers and percentages of applicants matched to the specialty by their USMLE Step 1 or COMLEX Level 1 scores.

## CONCLUSION

ERAS and NRMP both serve important functions within the residency selection process. ERAS is used to gather documents and facilitate interviews while the NRMP is used to determine actual placement. As recipients of important data from applicants, schools, and programs, they have begun to harness the power of their large stores of data, in combination with analytics, to provide valuable information to applicants about the specialties of their choice. It behooves all stakeholders to consider the conclusions of these data projects. For example, it is clear that applicants tend to apply to fewer programs than they should to maximize their chances of a successful match, when factoring for the marginal point of diminishing returns. This fact runs counter to the conventional advice given to them by program directors and medical schools. Additionally, it is worth expanding communication between educators at the undergraduate and graduate levels (and their representative

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[7] https://public.tableau.com/profile/national.resident.matching.program#!/vizhome/ChartingOutcomes_0/ChartingOutcomes.

organizations) to align the advice and counsel that is given to applicants to maximize the chance of success in the recruitment process.

In addition, program directors should be aware of the data that are being collected in the sphere of residency recruitment. One can surmise that in time, programs themselves will be analyzed for their publicly available metrics—including ABS examination success rates and ACGME accreditation decisions. Hopefully, with increasing transparency of data, compatible applicants and programs can more efficiently find each other with decreased expense and effort.

## SUPPLEMENTARY INFORMATION

Supplementary material associated with this article can be found in the online version at doi:10.1016/j.jsurg.2019.03.010.