

# How We Select Our Residents—A Survey of Selection Criteria in General Surgery Residents

George Makdisi, MD,\*<sup>†</sup> Tetsuya Takeuchi, MD,\* Jennifer Rodriguez, MD,<sup>‡</sup> James Rucinski, MD,\* and Leslie Wise, MD\*

\*Department of Surgery, Weill Medical College of Cornell University, New York Methodist Hospital, Brooklyn, New York, <sup>†</sup>Department of Surgery, Albert Einstein University, Beth Israel Medical Center, New York, New York, and <sup>‡</sup>Department of Surgery, Thomas Jefferson University Hospital, Philadelphia, Pennsylvania

**INTRODUCTION:** The future of general surgery depends on the quality of the resident trainees, and successful resident selection is a factor that is important in the process of high-quality surgical education.

**METHODS:** A 36-question survey regarding resident selection and the interview process was sent to surgical program directors, department chairs, and associate program directors across the United States and Canada.

**RESULTS:** In all, 262 valid replies were received (65%), of which 83% were program directors. University hospital programs accounted for 49% of the completed surveys. The mean yearly applicant number per residency program was 571. Most programs indicated that they strictly adhere to their selection criteria (82%). The screening selection is made by the program director in 62%. Only 31% of programs show their selection criteria on their web page. United States Medical Licensing Examination (USMLE) Step 1 is the single most important factor in screening criteria (37%), followed by USMLE Step 2 (24%). A total of 96% of all programs have female residents, 66% have non-Liaison Committee on Medical Education graduates, and 38% have Doctor of Osteopathy (DO) residents. Final selection is made by the program director in 49%. Although research experience is considered in selection criteria (80%), only 46% of programs offer research opportunities to their residents and only 13% require 1-year of research. On a Likert 5-point scale, the interview is by far the most important factor (4.69), followed by Step 1 score (4.21), and letters of recommendation (4.02).

**CONCLUSIONS:** Even though all general surgery programs have a wide range of screening/selection criteria, USMLE Step 1 is the single most important factor for preliminary screening, and the interview is the most important factor in determining the final selection. The final selection is relatively subjective and based on a combination of interview, USMLE scores, research experience, and personal judgment. (J Surg 68:67-72. © 2011 Association of Program Directors in Surgery. Published by Elsevier Inc. All rights reserved.)

**KEY WORDS:** residents, selection criteria, surgical programs, survey

**COMPETENCY:** Medical Knowledge, Practice Based Learning and Improvement, Systems Based Practice

## INTRODUCTION

The future of general surgery depends on the quality of the resident trainees. Successful resident selection is critical to the process of high-quality surgical education, and an understanding of that process represents an important step in ongoing development. The residency selection process should evaluate candidates appropriately to discern the qualities needed to transition successfully from medical school to residency.<sup>1</sup> Although some training programs establish rankings based on predetermined formulas, most programs continue to rank applicants using a process that seems subjective and poorly defined.<sup>2</sup> Because the documentation of validity and reliability of the resident selection process is uncommon, an examination of the various criteria might yield insight and provide variables for study to improve selection methods. To attain some baseline data, a survey concerning the residency selection process was conducted across the United States and Canada.

The purpose of this study was to analyze the current procedures used in resident selection, in departments of general surgery, to

Correspondence: Inquiries to George Makdisi, MD, Department of Surgery, New York Methodist Hospital, 506 sixth street Brooklyn, NY 11215; e-mail: gmakdisi@hotmail.com

establish the commonly used criteria and the degree to which those criteria are valued by those involved in the selection process.

## MATERIAL AND METHODS

An anonymous survey consisting of 36 questions (Figs. 1-3) was mailed to all United States (246) and Canadian (19) general surgery program directors, chairpersons, and associate program

directors using the Accreditation Council for Graduate Medical Education (ACGME) website. A total of 404 surveys (including a cover letter and a postage-paid return envelope) were included in the initial mailing. A second series of the same survey was sent out 6 weeks later to encourage responses. The questions were selected by the study team after reviewing the literature on the criteria used by program faculty to assess candidates. The questions were then tested on some of the faculty members of New

# Selection Criteria of General Surgery Residents

## ❖ Program Description

1. Position of person answering questionnaire:
  - a. Chair
  - b. Program Director
  - c. Associate Program Director
2. Program description:
  - a. University Hospital
  - b. Community University Affiliated Hospital
  - c. Community Non University Affiliated Hospital
3. Program size please give Number:
  - a. Number of Chief Residents graduated by year ( )
  - b. Total number of residents accepted by year ( )
  - c. Number of non-designated preliminary residents by year ( )
  - d. Number of designated preliminary residents by year ( )

## ❖ Primary Selection

1. Who is the person who does the screening selection?
  - Residency Coordinator
  - Resident (senior or chief)
  - Faculty member
  - Program Director
  - Associate Program Director
  - Chair
2. Are your screening selection criteria strictly adhered to?
  - Always
  - Almost always
  - Often
  - Sometimes
3. Are all the selection criteria shown on the Program web page?
  - Yes
  - No
4. Please state all the criteria of selection?
  - USMLE Part I scores
  - USMLE Part II scores
  - The applicant is LCME graduate
  - Membership in AOA
  - Graduate of designated affiliated Medical School
  - Class ranking
  - Dean's letter
  - Letters of recommendation
  - Having some connection with the program staff
  - Research experience
  - Publications
  - Other please specify?
5. What are the most important criteria for Screening? Please check one:
  - USMLE Scores
  - LCME graduate
  - Rotation in the program as a student
  - Membership in AOA
  - Research background
  - Publications
6. Do you have different screening criteria between categorical and preliminary?
  - Yes
  - No
  - Almost the same

**FIGURE 1.** Survey questionnaires: General program information and screening selection criteria.

7. Do you have female residents in your program?
  - Yes
  - No
8. Do you have DO residents in your program?
  - Yes
  - No
9. Do you have foreign graduates in your program?
  - Yes
  - No
10. Is there a provision for flexible application of selection criteria for personally recommended applicant?
  - Never
  - Rarely
  - Often
11. Do you ever select a candidate after the interview if he has not all the selection criteria but you formed a good impression during the interview?
  - Not at all
  - Rarely
  - Sometimes
  - Almost always
12. Who is the person who does the final interview selection?
  - Program Director solely
  - Faculty members
  - Senior residents

❖ **After the interview**

1. Who is the person who has most the influence on the selection?
  - Program Director
  - Selection team
  - A strict Grading Score ranking
2. Do you apply strict criteria for selection?
  - Yes
  - No
3. How flexible are your grading scales?
  - Not at all
  - Always
  - Often
  - Personal decision
4. Do you consider research experience when evaluating for selection?
  - Not at all
  - Rarely
  - Sometimes
  - Almost always
  - Always
5. Does your program have a research obligation as a requirement for graduation?
  - No
  - Sometimes
  - Almost always
  - Always
6. Are residents compelled to do a year of research?
  - Yes
  - No
7. Is there a requirement that resident publish at least one paper prior to graduation?
  - Yes
  - No

**FIGURE 2.** Survey questionnaires: residents' demographic and interview process.

York Methodist Hospital before mailing it out. No duplications were sent. This was verified by the ACGME website, and only 1 survey was sent out in the initial mailing. The second mailing was sent to those hospitals that had not replied, but the study was kept anonymous as no identification was used. Returned surveys were compiled and tabulated using a Microsoft Excel 2007 (Microsoft, Inc, Redmond, Washington) and SPSS 17 statistical software package (SPSS, Inc, Chicago, Illinois). A

database with no personally identifiable data was created for outcomes analysis, descriptive statistics were used for every question, and ordinal rank questions and means were calculated for each selection criteria. Using a Likert 5-point scale (5 = extremely important, 4 = very important, 3 = important, 2 = somewhat important, and 1 = not important), the respondents were asked to rank the importance of 14 different resident selection criteria.

8. Please rank the importance of each of the following selection criterion a 1-5.?

	Extremely important	Very important	Important	Somewhat important	Not important
1. USMLE Part I score	⑤	④	③	②	①
2. USMLE Part II score	⑤	④	③	②	①
3. LCME graduate	⑤	④	③	②	①
4. Membership in AOA	⑤	④	③	②	①
5. Graduate of designated or affiliated medical schools	⑤	④	③	②	①
6. Class ranking	⑤	④	③	②	①
7. Dean's letter	⑤	④	③	②	①
8. Letters of recommendation	⑤	④	③	②	①
9. Interview	⑤	④	③	②	①
10. Research background	⑤	④	③	②	①
11. Publication	⑤	④	③	②	①
12. Did rotation in the program	⑤	④	③	②	①
13. Some connection with the program staff	⑤	④	③	②	①
14. Having done a year as preliminary before	⑤	④	③	②	①

FIGURE 3. Selection Criteria Likert Scale.

## RESULTS

Of the 404 surveys that were disseminated, 262 valid surveys were completed and returned by program directors (67%), chairpersons (17%), chairpersons and program directors in conjunction (11%), and associate program directors (5%). Of the 262 responses, 49% were from university hospital programs, 38% from university affiliated community hospital programs, and 13% from non-university-affiliated community hospital programs. The yearly applicant number varied between programs (mean, 571 applicants; range, 24 to 2300 applicants) depending on the size of the program and the number of categorical residents in the program (range, 2 to 15). With regard to screening selection, 47% of the programs reported that this process was performed by the program director, 25% by the program coordinator, and 17% by the associate program director. Only 29% of programs showed their screening selection criteria on their web page. The USMLE Step 1 was the single most important factor (37%) in screening followed by USMLE Step 2 (24%) and graduates from The Liaison Committee on Medical Education (LCME) accredited institutions

(15%). The least important screening factor was prior research experience and publications (0.5%). Approximately 78% of programs indicated that they adhere strictly to their screening criteria. On average, 72 applicants were interviewed per program (mean of 16 interviews per categorical position available). Most programs (86%) indicated that they adhere to strict selection criteria after the interview. Although research experience is often considered as 1 of the selection criteria (80%), only 46% of the programs offer research opportunities to their residents and only 13% require at least 1-year of research to graduate. The final selection is made primarily by the program director (56%) or team of faculty members (30%). Almost all programs have female residents (96%) and non-LCME graduates (54%), whereas only 35% have DO residents.

### Using the Likert 5-point Scale

The interview was found to be the most important factor in the final selection of candidates for the ranking list (4.69), followed by USMLE Step 1 score (4.21), letters of recommendation (4.02), USMLE Step 2 (4.0), and graduating from an LCME

accredited medical school (3.95). The least important factor was prior experience as a preliminary surgical resident (1.57) (Table 1).

## DISCUSSION

Resident selection is one of the most important educational responsibilities for program directors and faculty. The goal of the residency selection process is to select residents who will transition easily from medical school to residency, complete the training program, pass their boards, practice surgery in a safe and effective manner, and contribute to the advancement of the specialty.<sup>3</sup> Although each training program employs its own set of screening and selection criteria, often the process that is used remains subjective. The selection process starts with the initial screening, the application review, and the invitation to interview, which are all influenced heavily by academic performance<sup>4</sup> (especially USMLE Step 1 and 2, grades in third year of medical school, and the dean's letter of recommendation). Even though the relationship between test performance and clinical skills has been found to be variable and inconsistent<sup>4-7</sup> most resident selection criteria depend heavily on USLME 1 and 2 Scores and class rank; these factors might possibly predict future resident performance. Numeric data from academic performance are useful especially when screening candidates for interviews from a large applicant pool.<sup>9,10</sup> Although objective data can be useful for screening, there does not seem to be a direct correlation between these academic performance markers and success as a resident.<sup>4,11</sup> Because academic performance data give an incomplete picture of the applicant, programs often use more subjective criteria, such as faculty evaluations, letters of recommendation, evaluations from medical school clerkships, and interviews to aide in determining favorable traits, such as reliability, ethical character, commitment, honesty, and professionalism. These traits have been found to be difficult to ascertain with objective data.<sup>5</sup> One problem with the subjective criteria that are used lies in the difficulty of establishing a standard measurement to insure inter-rater reliability between evaluators on the faculty team. At the bottom, there has been little

documented success using subjective criteria as a predictor of future success in resident performance.<sup>3,5,12</sup>

This survey generated a high response rate (65%) representing a high level of interest in this topic. Successful resident performance is of ongoing concern to program directors with current studies indicating that up to 25% of surgical programs report resident failure as indicated by probationary action, resident dismissal, and forced resignation.<sup>8,10,11</sup> The high failure rate among surgical residents might be attributed, in part, to a failure of the selection process, but the way in which the selection process may be used as a better predictor of success remains unclear.

Program directors and faculty involved in surgical education are interested in improving the methods by which their trainees are selected as 1 factor in the improvement of the educational process aiming for the desired outcome of high-quality graduate surgeons. The resident selection process begins with screening. Most programs adhere to specific screening criteria that are standard for their programs but vary between programs. This study demonstrates that the USMLE Step 1 is the most important factor used in screening criteria (37%), followed by USLME Step 2 (24%).

Throughout the selection process, the program director is the main player and has the ability to make exceptions for recommended candidates who may not fit all the screening or selection criteria. During the second portion of this process, the candidates selected for interview are questioned and screened by various interviewers. The interviewers then assess the candidate subjectively while attempting to eliminate any personal biases. Which members of the faculty are chosen to participate in this process is another area of variability.<sup>3</sup>

This survey showed that surgical residency programs consider the interview to be the most important variable for candidate ranking with the National Resident Matching Program. This has been confirmed by 3 other studies.<sup>13-15</sup> The interview is the most time-consuming part of the selection process for both the selection teams and the applicants, and it represents a process with uncertain validity and reliability. The interview should provide a window into the unique qualifications of each candidate. Most interviews are subjective and therefore not standardized between programs or even within the same program. Studies in the past have evaluated the process of interviews assessing the duration, the structure, the methods used, and what preestablished impressions the interviewer has based on the applicants résumé. The idea of a "second-look" interview has been debated with some advocating a return by the applicant for a second interview with others recommending a longer or more complete initial interview.<sup>13,16,17</sup> Personal biases have also been evaluated correlating interviewer access to USMLE scores and academic resumes to higher interview scores for applicants with higher levels of academic performance based on those objective criteria. Swanson et al.<sup>7</sup> suggested incorporating blinded interviews (where the interviewer would not have any information on the candidate before the interview) into the selection process to give candidates a better opportunity to ex-

**TABLE 1.** Likert Scale of the Important Criteria

Interview	4.69	AOA	2.93
USMLE step 1	4.21	Previous rotation	2.75
Letter of recommendation	4.02	Research	2.62
USMLE step 2	4.00	Publication	2.52
LCME	3.95	Graduate of affiliated medical school	2.46
Class ranking	3.47	Personal connection with the program	2.22
Dean's letter	3.02	Did preliminary year	1.57

likert scale of 5 points: extremely important—5 points, very important—4 points, important—3 points; somewhat important—2 points; and not important—1 point.

AOA, Alpha Omega Alpha.

press their communication skills, emotional stability, and personality without the bias provided by the objective and subjective factors documented in the academic record.

The results of this survey study indicate the value that is attributed to commonly used screening and selection criteria used by surgical residency programs. Although these criteria are considered important by those that employ them, they are relatively subjective, have not been shown to be consistently valid or reliable as predictors of successful performance, and might be influenced by personal bias. The USMLE Step 1 was found to be the single most valued factor for primary screening, and the interview was found to be the most valued factor for the final selection. The way in which the resident selection process can help to insure successful performance remains unclear, but those criteria that are used and considered important by the programs that use them are delineated by this survey. If trainee selection is an important factor in the improvement of the educational process, aiming for high-quality graduate surgeons, then this study suggests the need for selection protocols of demonstrable validity and reliability. Complementary studies, beginning with an analysis and study of the valued criteria delineated by this survey, are recommended. Specifically, long-term retrospective and prospective studies that correlate various applicant attributes to successful surgical resident performance may delineate valid and reliable predictors of an improved surgical educational outcome.

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