

A Practical Guide to Implementing Holistic Review during Surgery Resident Selection

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Summary: Provider workforce diversity is a key component of improving healthcare quality and addressing healthcare disparities. Furthermore, the traditional approach of “score-centered” application metrics do not consistently correlate with meeting milestones in surgery, nor do they adequately predict a surgical resident’s clinical strength and operative abilities. We present here an adaptable process by which surgical residency programs can identify their values and incorporate holistic review into their resident selection process to improve resident selection and physician workforce diversity. (*Plast Reconstr Surg Glob Open* 2023; 11:e5459; doi: 10.1097/GOX.0000000000005459; Published online 14 December 2023.)

The question that plagues residency program directors across the country: what factors predict a good surgical resident? The definitive answer remains elusive. Is it more important that a good surgical resident is a smart test taker or a compassionate provider? Should they excel more in technical skills or in team building? Studies have measured resident success through various proxies, such as scores on in-training examinations and boards pass rates, evaluations by faculty and program directors, and meeting of milestones. Across multiple specialties,¹⁻³ the same conclusions appear; US Medical Licensing Exam (USMLE) step 1 and step 2 scores correlate to future examination scores but do not seem to correlate with resident evaluations and clinical performance. Clinical rotation scores⁴ and interviews sometimes correlate with resident evaluations, albeit inconsistently.^{5,6} This traditional approach of “score-centered” application metrics do not consistently correlate with meeting milestones in surgery, nor do they adequately predict a surgical resident’s clinical strength and operative abilities. We present here an adaptable process by which surgical residency programs can identify their values and incorporate holistic review into their resident selection process.

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WHAT IS HOLISTIC REVIEW, AND DOES IT WORK?

Provider workforce diversity is a key component of improving healthcare quality and addressing healthcare disparities.⁷⁻⁹ If we wish to invest in substantially improving workforce diversity in the house of surgery, then we must depart from traditional applicant review approaches. Holistic review¹⁰ is defined by the Association of American Medical Colleges (AAMC) in both medical student and residency recruitment as considering the “whole” applicant, equitably weighing an individual’s metrics, attributes, and experiences. This requires *intentional* recruitment strategies that promote diversity as essential to excellence. Although this concept may seem nebulous, the AAMC offers tools to help programs select applicants who align with their mission and values, and promote diversity. Although some programs have adapted this strategy, few have studied their outcomes. A compelling study by Nehemiah et al demonstrates a statistically significant improvement in the proportion of female medical students ranked (61% versus 42%, $P < 0.01$), ethnically underrepresented in medicine (UIM) medical students ranked (20% versus 14%, $P = 0.046$), and UIM medical student matches (21% versus 14%, $P = 0.048$) following implementation of holistic review in residency selection at a single institution’s department of surgery,¹¹ suggesting that this strategy should be used more broadly in surgical residency selection. Lai et al demonstrates the use of a holistic review rubric¹² in general surgery resident selection that led to a statistically significant increase in the number of UIM interviewees. In fact, the Association of Program

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Directors in Surgery has released a General Surgery Application and Interview Consensus¹³ that strongly recommends the use of holistic review. This strategy has also shown promising improvement in recruitment of UIM students in urology,¹⁴ pediatrics,¹⁵ and other specialties. The AAMC in 2004 defined UIM as individuals who self-identify as Black/African American, Hispanic/Latino, or those from indigenous backgrounds.¹⁶

COMMON MISCONCEPTIONS ABOUT HOLISTIC REVIEW IN SURGICAL FIELDS

We Have Improved So Much Already and Are Sufficiently Diverse

Unfortunately, despite an increase in minority applicants into the field of plastic surgery, there has not been an increase in Black integrated plastic surgery residents.¹⁷ In fact, nearly all surgical specialties have struggled to have any improvement in the representation of UIM residents.¹⁸ Although certainly gender representation has improved at the trainee level in the past decades, women still struggle to be represented in positions of leadership and as speakers at conferences.^{19,20} Despite an increase in interest in the topic of diversity, there remains a tremendous amount of work to do to establish a plastic surgery workforce more reflective of the US population and ensure equity in surgery leadership.

We Should Not Have to Lower the Bar to Increase Diversity. Being a Doctor Requires Talent, Intelligence, and Much More

To acknowledge that holistic review is a useful tool is to agree that diversity is key to excellence, and not the contrary. The rhetoric of “lowering the bar” is frequently cited as an argument against holistic review, but rests on the assumption that the “bar” is correlated with what makes an excellent doctor. The reality is, to accept that holistic review does not “lower the bar,” one has to accept that traditional metrics are *not* the only critical factor for selecting excellent physicians. Test scores and research do not offer any insight into noncognitive attributes and are not correlated with resident performance.^{21,22} Traditional metrics of medical school performance are not indicative of resident quality, so it is vital to improve selection protocols.^{23,24} With USMLE step 1 now pass/fail, more attention is being paid to USMLE step 2 scores and research.²⁵ In fact, participation in pre-residency research does not correlate with further research productivity among junior attendings.²⁶ The traditional bar for resident selection is not based on any strong evidence that an individual score or metric correlates to being a good surgeon or researcher. Holistic review does not lower the bar, but instead it fundamentally changes the bar to look for excellent people with desirable experiences and attributes, rather than focusing on metrics.

Holistic Review Makes Us See and Consider Race When Really, We Should Not Even Be Thinking About Race. I Do Not See Race

Unfortunately, “not seeing race” is not a reasonable option in today’s society, nor ever in American history.

Takeaways

Question: How does a surgical residency program practically implement holistic review?

Findings: This study outlines, step by step, a customizable process by which a program can determine its goals in the resident selection process, adapt the application review and interview, and match the process to integrate these goals.

Meaning: This article provides a practical guide for the implementation of holistic review.

In the United States, patients face a myriad of racial and ethnic-specific healthcare and social challenges, which certainly shape their health and lived experiences. Social determinants of health, including socioeconomic status and racism, exert deleterious effects on Black health; for example, Black individuals remain the most susceptible to many chronic illnesses, psychiatric illness, and incarceration.²⁷ Optimizing healthcare delivery means we should not *ignore* race but instead practice cultural humility, or entering a relationship with our patients in which we honor their beliefs, customs, and values. A core value of cultural humility²⁸ is admitting that one does not assume and is willing to learn from a patient about their identity and experiences.

I Do Not Treat My Patients Any Differently if They Are White, Black, Asian, or Whatever. Why Is It So Important for Black Patients to Have Black Providers?

Any doctor is capable of being an excellent provider for any patient. Every day as providers, we care for patients that are different than us, and this is the norm. However, evidence does show that the quality of care is improved, and even the mortality of racial and ethnic minority patients is improved with race concordant physicians.²⁹ Additionally, Black patients are more likely to receive appropriate treatment for a myocardial infarction from a Black doctor as opposed to a non-Black provider.^{30,31} Similarly, LGBTQ providers are more likely to recognize intimate partner violence in an LGBTQ patient.³² The reality is, implicit bias and overt discrimination are pervasive in society and medicine does not escape this. Having minority surgeons is critical to the success and growth of our field.

HOW CAN MY SURGICAL RESIDENCY PROGRAM INCORPORATE HOLISTIC REVIEW INTO THE APPLICATION REVIEW PROCESS?

There are undoubtedly many ways to implement effective holistic review into the residency application review process. Programs should undergo an internal review process of current culture toward and readiness to enact targeted DEI recruitment efforts. To achieve meaningful success in these efforts, programs need to embrace and foster an environment of change. We present an adaptable and systematic process (Fig. 1) by which a program can incorporate holistic review for surgical resident selection



Fig. 1. Holistic application review and interview day checklists. This demonstrates the steps that programs can take at each step of the resident selection process to help implement holistic review concepts.

by combining the resources provided by the AAMC and up-to-date literature.

Step 1: Align Program's Goals

There is no single holistic review algorithm that universally aligns with all training programs as each institution will have different priorities, challenges, and goals. Some programs may place an emphasis on producing physician-scientists, whereas others prioritize generating clinically excellent community surgeons. The critical first step of holistic review is to determine what attributes align with the institution's mission and values. The AAMC's webpage on holistic review offers a downloadable activity sheet, "Applicant Criteria Identification and Prioritization," that programs can use to determine their priorities.¹⁰ As the worksheets can be lengthy, a program can create a survey listing twenty relevant experiences, attributes, and metrics and ask residents and faculty to force rank these in order of one to 20 according to what is most important to be an excellent plastic surgeon. (See **appendix, Supplemental Digital Content 1**, which displays survey for resident and faculty. This includes the questions and answer choices from the survey provided to program residents and faculty to determine priorities in resident selection, <http://links.lww.com/PRSGO/C918>.)

Step 2: Create a Diverse Application Review Committee

It is critical in implementing holistic review that a program has a racially and gender diverse cohort reviewing applications. To accomplish this goal, as frequently the faculty cohort is not sufficiently diverse, residents

and staff should be included in the group. An emphasis should be placed on equal representation of gender and inclusion of all UIM residents and faculty in the committee, as long as the work is aligned with their interests and recognizing the potential for UIM individuals to experience a "minority tax," or disproportionate burden of work. Group review pairings should be optimized within application review groups to maximize the diversity within each group.

Step 3: Implicit Bias Testing and Training for Everyone

Before starting application review, all residents and faculty should be strongly encouraged to complete two implicit association tests,¹¹ which take about 20 minutes to complete each. Promoting awareness of bias¹¹ is an important first step to reducing its impact on resident selection and evidence at the medical school admissions level¹⁴ demonstrates that having awareness of one's IAT results does impact decision-making. This requires at least 30 minutes of an individual's time. A program meeting can also be held during educational hours to complete these tests and subsequently discuss the role of implicit bias and discuss strategies to mitigate bias.

Step 4: Create an Effective Scoring Rubric Based on the Division's Goals

With the averaged results of the survey mentioned in step 1, a scoring rubric can be created for applications, including only the top 10 highest scored experiences, attributes, and metrics. The program should try reviewing a small number of applications in a group using the

scoring rubric and come to a consensus on finalizing the scoring system and which portion of the application is most revealing to evaluate each experience, attribute, and metric. A comments section should be available for reviewers to write in any personal notes about what they found exceptional about an applicant that may not be captured otherwise by the categories. Unfortunately, the effective use of a rubric depends on the relevant information being available in a residency application. The Electronic Residency Application Service system does not necessarily ask the correct questions to allow for insightful judgments about application attributes. It can also be cost prohibitive to apply. In plastic surgery, the Plastic Surgery Common Application³³⁻³⁵ was developed to address these issues and allow for a less cost prohibitive and more holistic approach to applicant review.

Step 5: Try to Read as Many Applications as You Can

The use of cutoffs can overemphasize metrics without allowing for applicants who may be exceptional in other ways to get a fair review. We recommend that all applications get reviewed and to have at least two individuals review each application. This may not be realistic for larger programs that get more applications, but the use of signals³⁶ and less stringent metric cutoffs can help streamline the process while still allowing promising students to be reviewed. Furthermore, inviting more individuals to be part of application review allows for more hands-on deck in reviewing applications and invites new perspectives into the process.

HOW DOES MY SURGICAL RESIDENCY PROGRAM INCORPORATE HOLISTIC REVIEW INTO THE INTERVIEW PROCESS?

Once the program makes it past reviewing applications, it is critical to continue deliberate incorporation of holistic review into the interview process and the rank meeting.

Recommendation 1: Implicit Bias Testing... Again

Given the time lapse between reviewing applications and interviewing, it is imperative to remind all interviewers of the role of implicit bias and repeat IAT testing shortly before interview day.

Recommendation 2: Blind Step Scores and Academic Metrics

The applicant has made it this far and passed application review—now the process is about determining who is going to make a good resident, not a good test taker. Once applicants make it to the interview pool and rank meeting, we recommend blinding interviewers from the academic metrics to focus the emphasis on attributes and experiences.

Recommendation 3: Diversify the Interviewers

If your faculty group is not diverse enough in gender and race/ethnicity, consider including resident interviewers and/or advanced practitioners as interviewers. It is vital to get multiple perspectives on students. Our division included all residents as interviewers.

Recommendation 4: Remind People of the Division’s Goals on the Day of the Interview and on the Day of Ranking

Before proceeding with interview day, meet with all interviewers and be sure to reiterate the division’s goals and values. This will refocus everyone’s intentions on this shared goal.

Recommendation 5: Standardize Interview Questions and Make Them About Relevant Qualities

The traditional interview approach is unstructured, where each interviewer formulates questions for the applicants based on preconceived judgments. A structured interview format with a standardized rubric is very helpful to give students equitable opportunities to express themselves and establish their excellence.³⁷ Based on our experience, we recommend each interview room be standardized to assess for one of the top eight attributes/experiences that were ranked by the division in the preapplication review survey. Each interview room, consisting of two interviewers, can ask two or three standardized questions and use a standardized rubric for their selected attribute/experience. They should be instructed to grade students individually and not share their perceptions with their co-interviewer. An example of how the room was structured to assess the trait “team player” is provided in [Table 1](#).

Recommendation 6: The Rank Meeting: Avoid the Concept of “Fit”

Unfortunately, the practice of hiring as “cultural matching” exists in many industries, including medicine.³⁸ Interviewers have a natural tendency to like people who are similar to themselves. The concept of “fit” is a subtle way to impose implicit bias; saying someone “fits in” is essentially saying they are like what the program already has. An emphasis should be placed on finding someone who can get along with others in the program but also bring a *new perspective*. It is critical to have a designated individual at the rank meeting who is responsible for avoiding biased language and keeping the conversation directed toward this goal.

CONCLUSIONS

We present here specific recommendations for adapting holistic review for surgical residency programs based

Table 1. Examples of Standardized Interview Room

Theme	<ul style="list-style-type: none"> Choose a selected attribute to evaluate per room Example <ul style="list-style-type: none"> Team Player
Interviewers	<ul style="list-style-type: none"> Distribute to maximize gender and racial diversity per room Provide each interviewer separate rubrics and ask that they score the applicant independently
Questions	<ul style="list-style-type: none"> Use standardized questions with provided rubrics Ask 2–3 questions per room Examples for “Team Player” attribute: <ul style="list-style-type: none"> Do you work better on a team, with just one partner, or alone? What type of personalities do you work best with, and why? How would you handle undeserved criticism from a superior?

This demonstrates the question and interview format in a standardized interview room implementing holistic review.

on our experience and review of the literature. The suggestions presented allow for individual residency programs to determine their goals and values and apply these while minimizing bias in the process of resident selection.

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DISCLOSURE

The authors have no financial interest to declare in relation to the content of this article.

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