

# In Search of Evidence-Based Residency Program Candidate Selection Criteria

George Velasco MD, George Wennerberg MD, Omar Canaday MD FACP  
Department of Internal Medicine; University of Nevada, Reno School of Medicine



University of Nevada, Reno  
School of Medicine

## Objective

We sought to develop a residency candidate selection tool that was selective for qualitative attributes such as work ethic and motivation.

## Background/Design

Examining residency selection criteria is timely given the switch to a pass/fail USMLE step 1 and the continual need to reassess resident selection and medical school curricula. There is a current need for discussion on qualitative assessment of residency work ethic qualities. We give an example of a resident-lead initiative at a single residency program that may be reproducible at other programs.

## Lit Review/Outcomes/Limitations

-There has been no consensus on a residency application scoring system<sup>1</sup> and most traditional metrics used in residency selection were not associated with performance on ACGME milestones<sup>2,3,4</sup>.

-While desirable characteristics have long been established, programs should also assess for unwanted characteristics and applicant commitment to specialty<sup>5,6</sup>.

-Work ethic and joy in medicine, in addition to academic strength, have been identified as values related to residency success<sup>7,8</sup>. It has been demonstrated that prior nonmedical success predicts future medical success<sup>9</sup> so a selection process should seek out that prior track record.

-Limitations lie in the fact that there is a paucity of research assessing selection outcomes and more research needs to be done to predict residency success and attrition<sup>10</sup>.

-Potential assessment metrics could include ACGME milestones, attrition, fellowship match rate, missed work days, specialty engagement, and job placement satisfaction



|   | Not at all like me | Not much like me | Some what like me | Mostly like me | Very much like me |
|---|--------------------|------------------|-------------------|----------------|-------------------|
| 1. New ideas and projects sometimes distract me from previous ones.                                 | 5                  | 4                | 3                 | 2              | 1                 |
| 2. Setbacks don't discourage me for long; I don't give up easily.                                   | 1                  | 2                | 3                 | 4              | 5                 |
| 3. I often set a goal but later choose to pursue a different one.                                   | 5                  | 4                | 3                 | 2              | 1                 |
| 4. I am a hard worker.  | 1                  | 2                | 3                 | 4              | 5                 |
| 5. I have difficulty maintaining my focus on projects that take more than a few months to complete. | 5                  | 4                | 3                 | 2              | 1                 |
| 6. I finish whatever I begin.   | 1                  | 2                | 3                 | 4              | 5                 |
| 7. My interests change from year to year.   | 5                  | 4                | 3                 | 2              | 1                 |
| 8. I am diligent; I never give up.  | 1                  | 2                | 3                 | 4              | 5                 |
| 9. I have been obsessed with a certain idea or project for a short time but later lost interest.    | 5                  | 4                | 3                 | 2              | 1                 |
| 10. I have overcome setbacks to conquer an important challenge.                                     | 1                  | 2                | 3                 | 4              | 5                 |

Perseverance and grit (The Grit Scale by Angela Duckworth) were qualities strongly associated with success and decreased attrition in military cadets at West Point<sup>11</sup>. Grit Scale table reproduced from University of Tennessee Center for Industrial Services

## Proposed Interventions

-Machine learning and AI are being explored as technologies to assess for selected applicant traits within the MSPE, evaluations, activities list, and the personal statement<sup>12</sup>.

-New assessment methods such as case-based interview protocols, technical tests, multiple mini interviews (MMI), adoption of AI, and psychometric processes including personality testing should be integrated into the candidate selection process<sup>9,13,14,15,16</sup>

-We developed a resident-developed creed, The Nevada Criteria, that was used as guidance during the candidate interview process

## The “Nevada Criteria”

1. Work ethic- We seek physicians who strongly believe working hard for their patients, their program, and their education is a good thing and an honorable thing.
2. Commitment to the specialty- We seek physicians who love internal medicine and honor it as a complex and exciting field. We are not seeking those who have demonstrated that they preferred another specialty where internal medicine is their back up choice or physicians who were unduly influenced into medicine by family members without choosing this profession on their own accord.
3. Sacrifice- We seek physicians who know that achieving something great long term means giving up some things in the short term
4. Attendance- We seek physicians who understand that training is a special time of growth and that sick days or leaving early limits one's educational opportunities
5. Productivity- We seek physicians who during their time here seek out opportunities such as attending meetings or submitting publications, beyond zero or the minimum
6. Gratitude for educational opportunity- We seek physicians who value lectures, presentations, and guest rotations as a valuable opportunity
7. Being a team player- We seek physicians who avoid adding work to their colleagues either by leaving before work is done or by taking an absence or sick day when they are not sick

## Summary

-The current literature suggests traditional notions in resident selection were poor prognosticators of actual work performance.

-Residency selection criteria should better mirror physician job candidate selection criteria that seeks out industriousness and a desire to contribute.

-New methods of candidate interview assessment from other disciplines are very promising and should be implemented and trialed for efficacy



Rather than exist as a rehash of med school admissions criteria, residency admissions should select for optimal workforce qualities and industriousness

## Key References

1. Naldes AI, Ayyala HS, Lee ES. How Do We Choose? A Review of Residency Application Scoring Systems. *J Surg Educ.* 2021 Sep-Oct;78(5):1461-1468.
2. Burkhardt JC, Parekh KP, Gallahue FE, London KS, Edens MA, Humbert AJ, Pillow MT, Santen SA, Hopson LR. A Critical Disconnect: Residency Selection Factors Lack Correlation With Intern Performance. *J Grad Med Educ.* 2020 Dec;12(6):696-704.
3. Busha ME, McMillen B, Greene J, Gibson K, Milnes C, Ziemkowski P. One Institution's evaluation of family medicine residency applicant data for academic predictors of success. *BMC Med Educ.* 2021 Feb 2;21(1):84.
4. Golden BP, Henschen BL, Liss DT, Kiely SL, Didwania AK. Association Between Internal Medicine Residency Applicant Characteristics and Performance on ACGME Milestones During Intern Year. *J Grad Med Educ.* 2021 Apr;13(2):213-222.
5. Jordan J, Sternberg K, Haas MRC, He S, Yarris LM, Chan TM, Deiorio NM. Reimagining Residency Selection: Part 3-A Practical Guide to Ranking Applicants in the Post-COVID-19 Era. *J Grad Med Educ.* 2020 Dec;12(6):666-670.
6. VanOrder T, Robbins W, Zemper E. Residency Program Directors' Interview Methods and Satisfaction With Resident Selection Across Multiple Specialties. *J Am Osteopath Assoc.* 2017 Apr 1;117(4):226-232.
7. Drum B, Lamb S, Gradick C. Values-Based Resident Selection in an Internal Medicine-Pediatrics Residency Program. *J Gen Intern Med.* 2022 Nov 7.
8. Hyman JH, Doolittle B. Thriving in Residency: a Qualitative Study. *J Gen Intern Med.* 2022 Jul;37(9):2173-2179.
9. Vaughan LA, Quick JA. Evidence-Based Selection of Surgical Residents. *Surg Clin North Am.* 2021 Aug;101(4):667-677.
10. Stephenson-Famy A, Houmard BS, Oberoi S, Manyak A, Chiang S, Kim S. Use of the Interview in Resident Candidate Selection: A Review of the Literature. *J Grad Med Educ.* 2015 Dec;7(4):539-48.
11. Duckworth, Angela. *Grit: The Power of Passion and Perseverance.* First Scribner hardcover edition. New York, NY, Scribner, 2016.
12. Drum, B; Gradick, C; Lamb, S; Hurdle, JF. CREATING A VALUES-BASED APPROACH TO RESIDENCY SELECTION USING MACHINE LEARNING. Abstract published at SHM Converge 2021. Abstract 226. *Journal of Hospital Medicine*
13. Bedzra EKS, Goh JL. The Residency Selection Process in the New World; Time for a Rethink. *Semin Thorac Cardiovasc Surg.* 2021 Autumn;33(3):825-829.
14. Cullen MJ, Zhang C, Marcus-Blank B, Braman JP, Tiriyaki E, Konia M, Hunt MA, Lee MS, Van Heest A, Englander R, Sackett PR, Andrews JS. Improving Our Ability to Predict Resident Applicant Performance: Validity Evidence for a Situational Judgment Test. *Teach Learn Med.* 2020 Oct-Dec;32(5):508-521.
15. Lund S, D'Angelo JD, Balout M, Yeh VJ, Stulak J, Rivera M. Simulation as Soothsayer: Simulated Surgical Skills MMIs During Residency Interviews are Associated With First Year Residency Performance. *J Surg Educ.* 2022 Nov-Dec;79(6):e235-e241.
16. Patel H, Yakkanti R, Bellam K, Agyeman K, Ayer A. Innovation in Resident Selection: Life Without Step 1. *J Med Educ Curric Dev.* 2022 Mar 29;9:23821205221084936.