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Education

PROGNOSTIC VALUE OF THE MULTIPLE MINI-INTERVIEW FOR EMERGENCY MEDICINE RESIDENCY PERFORMANCE

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☐ **Abstract—Background: The Multiple Mini-Interview (MMI) uses short, structured contacts, and is known to predict medical school success better than traditional interviews and application materials. Its utility in Emergency Medicine residency selection is untested. Objectives: We investigate whether it provides additional information regarding future first-year resident performance that can be useful in resident selection. Methods: From three Emergency Medicine residency programs, 71 interns in their first month completed an MMI developed to focus on desirable resident characteristics. Application data were reviewed. First-year resident performance assessments covering the American Council for Graduate Medical Education (ACGME) core competencies, along with professionalism and performance concerns, were obtained. Multiple logistic regressions were employed and MMI correlations were compared with program rank lists and typical selection factors. Results: An individual's score on the MMI correlated with overall performance ($p < 0.05$) in single logistic regression. MMI correlated with ACGME individual competencies patient care and procedural skills at a less robust level ($p < 0.1$), but not with any other outcomes. Rank list position correlated with the diagnostic skill competency ($p < 0.05$), but no others. Traditional selection factors correlated with overall performance, disciplinary action, patient care, medical knowledge, and diagnostic skills ($p < 0.05$). MMI was not correlated significantly with the outcomes when included in multiple ordinal logistic regression with other selection factors. Conclusions: MMI scores correlate with overall performance, but are not statistically significant when other traditional selection factors were considered. The MMI process seems potentially superior to program rank list at correlating with first-year performance. The MMI may provide additional benefit when examined using a larger and more diverse sample.** © 2015 Elsevier Inc.

☐ **Keywords—medical education; resident education; resident selection; resident assessment**

INTRODUCTION

Selection of residency candidates is a high-stress process of recruitment for both the training program and applicant. In medical school admissions, traditional measures of applicant quality such as unstructured interviews, Medical College Admission Tests, and grade point average have fared poorly in predicting medical school performance (1–5). To address the limitations of the traditional application process, the Multiple

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Mini-Interview (MMI) was developed (6). The MMI utilizes an Objective Structured Clinical Examination (OSCE) format centered around a defined problem-focused encounter to have multiple short, structured contacts with an applicant (6,7). This format is designed to assess an applicant's communication and problem-solving skills (6,7). Current literature indicates that performance on the MMI correlates with preclinical grades and performance on clerkships and predicts performance better than other traditional elements of the medical school application (8,9). Also, the MMI may be able to identify candidates with professionalism issues who may not otherwise be detected until later in their training (8,9). Although there is no definitive literature that reports the exact prevalence of the use of the MMI in United States (US) medical schools, it has become so prevalent as to warrant an article in *The New York Times* and to feature prominently on multiple Web sites that prepare applicants for the admissions process (10–13). These Web sites describe at least 30 allopathic medical schools utilizing the MMI at this time.

Unlike medical school admissions, residency selection involves institutions and potential residents creating a rank list of desirable programs/applicants and does not follow the traditional admissions timeline or power dynamics. McMaster University, where the MMI originated, admits only 4% of its applicants (8). In contrast, 89% of US medical school seniors that applied for an Emergency Medicine residency in 2011 found a position (14). This dramatically alters the dynamics of recruitment. Current literature for graduate medical education is limited, but there are likewise strong suggestions that the traditional interview process lacks rigor and predictive value (4). A Canadian study recently tested the reliability and acceptability of the use of the MMI in postgraduate admissions, with applicants reporting it acceptable across multiple program types (Internal Medicine, Pediatrics, and Obstetrics-Gynecology) (15). In Emergency Medicine, a single-institution study suggests that the best predictors of residency performance include clerkship grades and the quality of medical school attended (16). Although many medical schools use an MMI or an OSCE, or both, to assess students, the specific findings of these assessments are not generally available to residency program decision-makers. MMI stations have been previously tailored to provide data on specific desired traits and thus, individual Emergency Medicine (EM) programs could design their own unique program and have direct assessment of behavioral skills, such as communication and teamwork, not available to them in the current application and traditional interview process (6). Therefore, we believe the MMI has potential to supplement residency decision-makers' perception of applicants in the current system.

Our primary research question is whether the MMI score correlates with first-year residency performance. We are also interested in whether the MMI provides new information for making selection decisions on EM residency applications above currently considered factors (Table 1), whether the MMI score provides additional insight into a potential resident's communication skills, which is not seen with current methods, and finally, if there is a correlation between MMI performance and disciplinary issues in the first year of residency. We hypothesize that the MMI process will provide additional discriminatory information regarding future first-year residency performance above the current process. We believe it will be especially helpful in the area of resident communication ability. Furthermore, we hope it will do so in a manner that can be useful by residency program decision-makers in the selection of potential trainees.

METHODS

Study Design

An eight-station MMI was adapted for use in EM based on example stations published in the medical school admissions literature (6,17). Details of the MMI process employed in this study can be found in "The Multiple Mini-Interview (MMI) for Emergency Medicine Resident Selection" by Hopson et al. (18). EM interns in their first month of training served as surrogates for residency applicants. Because prior knowledge of the stations has been shown to not significantly affect performance, all participants experienced the same set of stations (19,20). The study was reviewed and approved by the Institutional Review Board at all three participating institutions, and written consent was obtained from all participants.

Study Setting and Population

Participants were recruited from the intern class at three EM residencies during the first month of their residency, with a total of 71 of 72 eligible interns participating. The MMI was administered in a free period in the intern orientation to facilitate participation. Participation in the study was voluntary; all residents underwent informed consent and were given details of the study prior to participation. The opportunity to opt out was provided both prior to and after administration of the MMI. One resident did not participate due to a scheduling conflict. Of those initially enrolled, 65 subjects had complete outcome data for inclusion in the analysis. The three EM residences included both 3- and 4-year programs, as well as both urban and suburban training sites. One program's interns (43 potential subjects) were recruited for 3 straight years, whereas