

# Quarterly - Medical Education - UPdate



## Consensus-Driven Priorities for Firearm Injury Education Among Medical Professionals

Hoops K, Fahimi J, Khoeur L, Studenmund C, Barber C, Barnhorst A, Betz ME, Crifasi CK, Davis JA, Dewispelaere W, Fisher L, Howard PK, Ketterer A, Marcolini E, Nestadt PS, Rozel J, Simonetti JA, Spitzer S, Victoroff M, Williams BH, Howley L, Ranney ML. Acad Med. 2021 Jul 6. PMID: 34232149

Firearm injury was the fifth leading cause of death for individuals 18-64 in the United States, resulting in 40,000 deaths in 2018. Morbidity and mortality from firearm induced injuries results in a significant financial cost to the American healthcare system. Prior research has demonstrated benefits of provider involvement in prevention of firearm injuries. However, there is limited evidence for widespread or robust firearm injury prevention education in medical school or resident education.

In light of this, the authors formed an expert advisory panel of subject matter experts from across the United States to develop education priorities for healthcare providers. The goal was to aid in the development of medical education guidelines on firearm safety and counseling. Panelists came from diverse backgrounds including clinicians, firearm owners and trainers, veterans, non-clinical researchers and medical educators.

The expert group convened via Zoom with representation across geographic and expert fields at all meetings. Seven contextual categories were selected to focus on including general topics, intimate partner violence, suicide, and accidental injury. Using nominal group technique over iterative meetings, a specific and comprehensive consensus-based list of recommendations were agreed upon. The final list of priorities is available [here](#) for use in curriculum development.

Emergency medicine physicians have an important role intervening in the cycle of gun violence through screening and counseling. It is becoming increasingly important for residents to gain the knowledge and confidence to initiate these conversations with patients. These first of their kind expert consensus guidelines provide the framework for the development of a robust resident education curriculum on gun violence prevention.

-Patrick Cassidy, MD (PGY2) / Aaron Danielson, MD,MAS

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## Assessing the Impact of the COVID-19 Pandemic on Geographic Residency Placement Relative to Medical School Location

Cotner CE, Mercadante SF, Shea JA. J Grad Med Educ. 2022 Feb;14(1):108-111. PMID: 35222828

The impact of virtual interview days to residency programs led many to wonder if an effect on rank lists would be seen. If a student was only able to experience a program virtually and not physically visit the hospital, see the city, and meet the residents, would they prefer their home institutions and stay closer geographically given their baseline knowledge?

Combined with the virtual interview day was a lack of away rotations which provides students a deeper dive into program culture and the ability to experience first-hand the faculty and residents in the ED setting. All of these have been previously described as important factors for students when finding one's fit in a program, but over 80% of applicants find the virtual format at least moderately, if not very challenging to assess a residency. The answers would be apparent come Match Day. Previous studies on the specialty level gave conflicting results with a urology study finding no difference and a plastics surgery study finding an increase in residents staying locally.

Researchers led by the University of Pennsylvania searched the webpages of the 155 LCME accredited MD programs in order to find publicly available match lists. Follow-up emails to medical schools without public lists were also sent with a request for de-identified information. A request was made to the NRMP for match information, but it was denied. A comparison was made with pre-pandemic (2018-2020) to pandemic data (2020-2021).

Of the 155 LCME-accredited medical schools, match data was available from just under 40%. Public medical schools made up the majority (69%) with the most common regions having available data being the South Atlantic (23%), East North Central (18%) and Middle Atlantic (16%) regions. Noticeably private schools (19/64) and western medical schools (2/15) were very unrepresented in this study. Based on this study, the pandemic effect appears to be minimal. Students overall matched within their own state 35.9% of the time in 2021 compared to 34.3% in 2018-2020.



Public medical school students were more likely to stay local with 40.3% matching in-state during the pandemic vs. 38.5% in previous years. Specialties that tended to have a higher percentage of students who stayed within their state were dermatology (44.6% v 34.3%), combined internal-medicine pediatrics (40.1% v 28.2%) and orthopedic surgery (37.8% v 31.5%). Emergency medicine showed a very modest increase with 31.2% matching in-state during the pandemic compared to 29.5% in prior years. An important finding was that in specialties where  $\geq 50\%$  of students often perform an away rotation, these students were more likely to match in the state where they attended medical school. This differs from pre-pandemic times when students matched at their away rotation site. Many factors could influence this: inability to decide on "fit" given only virtual exposure or limited ability to signal interest in the program. Another theory is that students who attend public medical schools are often in-state residents and a noticeable change in priorities occurred during the pandemic with a focus shifting to family who are likely nearby being more important.

This study is limited by its data set but does provide additional information for programs to consider if virtual interviews continue into the future. Limiting the analysis to states themselves also does not consider border areas where some may have crossed to what may quantitatively show as matching out of state but geographically may remain close by. Hopefully a return to away electives will provide students with the information they need to make well informed rank list decisions.

- Christopher Sampson, MD



## Linking Patient Care Ownership and Professional Identity Formation through Simulation

Wyatt TR, Kleinheksel AJ, Tews M. Teach Learn Med. 2021 Apr-May;33(2):164-172. PMID: 33840311

During training our clinical experiences, personal interactions, and knowledge help create our identity as a physician. This process in medical education research has been termed professional identity formation (PIF). One important concept related to this development is patient care ownership. The researchers explored the relationship between patient care ownership and PIF by analyzing the reflections of a cohort of 189 third-year medical students after they participated in a 15-minute respiratory distress simulation case. After the participants completed the cases, the researchers gathered data from 12 focus groups (n=84). A two-step latent content analysis was performed to find meaning in the participants responses. The analysis led to a pattern of cognitive steps leading to PIF which the researchers defined as disorientation, reconceptualization, and reprioritization. In this pattern, there is an initial catalyst of patient care ownership, which the participants were unfamiliar with. This change led to increased responsibility and a feeling of disorientation (step 1). The participants then used their previous experiences to frame their new situation and role of physician, which the authors defined as reconceptualization (step 2). As the participants mindsets changed to a physician's mindset, their actions changed to meet the expectations of a physician role, defined by the authors as reprioritization (step 3). The last step is important to complete to trigger the participants to reflect on their PIF. The authors reflect that the study has important implications for medical education

including: the need for students to actively engage in patient care and how longitudinal experiences could be better at providing opportunities for students to actively engage and create a professional-patient relationship. They note this is an area of future research. The authors note multiple limitations. The study was at a single institution with limited participants. In addition, the student's previous clinical experiences which can vary widely depending on the clerkship were not controlled for. In conclusion, the researchers used simulation to demonstrate how creating patient care ownership can initiate a process that helps student's development of professional identity.

Courtney Schwebach MD (PGY1) / Amrita Vempati MD



## Geographic mobility in the emergency medicine residency match and the influence of gender

Regan L, Gisondi MA, Branzetti J, Mitchell M, Romeo M, Kayko C, Hopson LR. AEM Educ Train. 2021 Aug 1;5(4):e10706. PMID: 34859171

Recently, the medical education community has been trying to address equity issues in access to residency training. While women comprise about half of medical school classes, they remain under-represented in emergency medicine. This is reflected in our residents (37% female), academic physicians (27% female) and leadership. In this interesting study, the authors note that geographic relocation for job opportunities generally correlates with measures of career success such as salary and leadership. They hypothesize that the discrepancy in female EM leadership may be due to women being less willing to move significant geographic distances. In order to study this, the authors looked at the 2020 rank order lists (ROLs) of 8 EM programs. They calculated the distance between the applicant's medical school and the residency program, then compared the distance for men vs. women. In effect, they measured how far the applicant was willing to travel to interview for a residency position, assuming that "home" was their medical school location. The primary result was an average distance of 619 miles for women and 641 miles for men; this difference was not found to be statistically significant. The authors concluded that professional mobility for residency was not a constraint for women. These data are helpful when trying to design interventions to promote gender equity in EM. Two important caveats for this study are the choice of a convenience sample of 8 residency programs, and using ROLs (as opposed to perhaps Match results, or ERAS application data). While none of these metrics is perfect, Match results may better incorporate the applicants' preferences to move (as opposed to preferences to interview, or consider moving), and the applicants' ERAS data may reflect larger preferences of regions they are considering. The NRMP recently announced that they will collect demographic data; hopefully the authors will publish a similar study using new data.

-Nikil Goyal, MD



## Evidence of Specialty-Specific Gender Disparities in Resident Recruitment and Selection

Bowe SN, Wang X, Whipple ME, Bly RA. J Grad Med Educ. 2021 Dec;13(6):841-847. PMID: 35070097

Gender disparity across some medical specialties is an ongoing issue. Several specialties have challenges with increasing representation in their fields despite efforts to do so and the likely advantages of greater diversity. Factors leading to these disparities are multi-factorial and vary among specialties. One major influence is the residency recruitment and selection process; this study aims to gain a better understanding of how the match process affects gender diversity in specific specialties. The authors looked at data from ERAS (applicant numbers) and the ACGME (matched resident numbers) in 11 competitive specialties (dermatology, emergency medicine, general surgery, neurological surgery, obstetrics and gynecology, orthopedic surgery, otolaryngology, plastic surgery, radiation oncology, radiology, urology) and compared the proportions of female applicants to matched female residents from 2013-2018. The idea being that applicant numbers are representative of recruitment practices while matched resident data is more reflective of selection practices. From the ERAS data, General surgery, ob/gyn, and orthopedic surgery had an increased proportion of female applicants over that time period while dermatology had fewer. ACGME data showed increased proportions of female residents in general surgery and neurosurgery. When comparing ERAS and ACGME data, EM had a 2% higher proportion of female residents to female applicants, while the number of female ob/gyn residents was 6.6% higher than female applicants. Conversely, radiology had a 1.7% lower proportion of female residents to applicants. One-third of specialties had no significant changes in proportions of applicants vs residents. Only general surgery increased the proportion of both female applicants and residents.

The authors were unable to draw specific conclusions as to what leads to these discrepancies. They discuss that studies have shown a "critical mass" of ~ 15% of a minority group can produce changes in group dynamics which in turn may work to sustain that group. Other analyses of hiring practices have shown that females have a lower chance of being hired when representation in the recruitment group was <25% female. The authors speculate that specialties with under-representation of a specific gender may have difficulty reducing the impact of unconscious bias due to a lack of this "critical mass."

Study limitations include that the gender data was binary only and therefore did not represent all applicants. Also, only applicant and resident numbers were available; information about applicant screening, interviewee selection, and rank list determination was unavailable. Obtaining further data from individual specialties and institutions regarding these factors could lead to valuable insights regarding selection process, reveal areas to target for change, and ultimately improve gender equity among medical specialties.

- Amy Stubbs, MD



# Quarterly Medical Education UPdate



## Explaining a Potential Interview Match for Graduate Medical Education

Wapnir I, Ashlagi I, Roth AE, Skancke E, Vohra A, Lo I, Melcher ML. J Grad Med Educ. 2021 Dec;13(6):764-767. PMID: 35070086

As residency application numbers trend upwards and low-cost, easily-scheduled, virtual interviews remain a reality, programs may be hosting more “low-yield” interviews to ensure an adequate match. Could a match process for residency interviews help solve the problem? The goal would be to utilize a similar algorithm as the NRMP match, giving candidates and programs each a set number of interviews that would favor pairings that are more likely to lead to concordant final matches.

Two scenarios were proposed in the paper. The first scenario proposes that programs submit applicants in tiers of equally qualified candidates while applicants submit an ordered rank list of their preferred programs. This eliminates candidate pressure to interview at all the possible programs and offers interviews based on preferences. In this scenario, programs do not submit a rank list, but “tiers” of candidates equally qualified to interview. In the second scenario, both programs and applicants have ordered rank lists. The challenge with this scenario is determining the balance between a reasonable number of interviews and interview matches that will lead to desirable final residency matches. Visual representations of each scenario are in the paper and help elucidate the differences and benefits of each.

The key would be to reduce the number of interviews without disadvantaging candidates and program. Utilization of simulation models using historical data may be able to help determine the optimal algorithm to accomplish this goal. A nonbinding pilot could be utilized in parallel with the current process, examining what proportion of final matches would have also been interview matches.

The proposal is certainly intriguing, and carries intellectual weight as one of the authors, Alvin E. Roth, won the Nobel Prize in Economics and modified the NRMP algorithm used today.

-Eriny Hanna, MD (PGY-2) / Carmen Wolfe, MD



## Warnings in early narrative assessment that might predict performance in residency: signal from an internal medicine residency program

Kelleher M, Kinnear B, Sall DR, Weber DE, DeCoursey B, Nelson J, Klein M, Warm EJ, Schumacher DJ. Perspect Med Educ. 2021 Dec;10(6):334-340. PMID: 34476730

A challenge of clinical competency committees (CCC) is determining when intervention with a remediation program is needed for a resident. In this study, researchers from the University of Cincinnati attempt to answer a question many CCC's face when reviewing their residents: for early trainees, are there themes in narrative assessments that may portend struggles later in residency? By identifying these trainees, CCC's could intervene in a more-timely manner.

This is a single center study at an internal medicine residency program with 89 residents across three years of training. The authors used workplace-based assessments (WBA) utilizing a 5-level entrustment scale as well as narrative comments. These WBA scores were converted to Z-scores for standardization. 26 residents with a Z-score 1 SD below the mean were compared to 13 randomly selected residents with a Z-score at or above the mean. Additionally, the authors compiled all narrative data for these residents for the first 6-months of their training.

An inductive thematic analysis of the narrative data was performed to identify two types of meaning: explicit/manifest (ie surface) and implicit/latent (i.e. deeper meaning). After multiple phases of blinding and evaluation of the data, the authors identified differences in the two cohorts of residents.

In total, 6 themes were identified in the lower entrustment group. Explicit/manifest themes include: 1) Gaps in attention to detail, 2) Communication deficits with patients, 3) Difficulty recognizing the “big picture” in patient care. Implicit/latent themes include: 4) Describing feedback as a deficiency rather than an opportunity to improve, 5) Normative comparisons that identified a resident behind their peers, 6) Warning of possible risk to patient care.

While there were many differences in the narrative data between groups, there were also many similarities. Particularly the need to further knowledge acquisition, need to broaden differential diagnosis, need to increase confidence, improving efficiency and gaining more clinical experience.

While this study looked at only 39 of 89 residents at a single internal medicine residency, and may not be generalizable to all training programs, it does give insight into possible themes in narrative feedback which may help CCC's identify trainees who may or may not need early support/intervention.

- Jonathan Giordano, DO, MEd / Cindy Amilcar, MD (MedED Fellow)

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