

# Gender Disparity in Procedural Training: A Persistent Problem in Need of Early Interventions

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Gender disparity in medicine negatively impacts academic promotion, research productivity, representation at conferences, leadership opportunities, and earnings for women physicians (1). Gender disparity appears early in medical education and persists throughout training, affecting women trainees' representation, learning, and assessment (2–5). A careful examination of women's educational experiences during residency is therefore required to understand the impact of gender on professional training and practice. This issue of *ATS Scholar* presents an example of such work by Olson and colleagues, who investigated how gender influences access to procedural training during intensive care unit (ICU) rotations for internal medicine (IM) residents (6).

The study first compared procedural volumes across two IM residency programs and found that men performed significantly more procedures than women during unstructured ICU rotations in one of the two programs, accounting for time spent on the rotation. However, no difference in exposure was seen for structured procedure rotations in either program. In subsequent focus groups

separated by gender, both men and women trainees reported gender-based differences in attitudes and behaviors toward procedural training. Both groups perceived men as more confident regarding their procedural skills and as stronger self-advocates for procedural opportunities than women were. Men also tended to describe themselves as “procedure oriented” and to report higher tolerance toward potential risks associated with doing procedures unsupervised. In contrast, women raised concerns about doing procedures without adequate preparation or supervision. Furthermore, residents from both genders suggested that certain supervisors had different expectations and behaviors toward men and women. Healthcare teams' assumptions of trainees' competency based on gender-related behaviors and attitudes appeared particularly problematic in the larger center, where efficiency (completing procedures quickly) was primarily valued.

Many aspects of this study make it an important addition to the literature on gender equity in procedural training. Studying structured procedural rotations and unstructured ICU rotations within the

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same program is novel and enables valuable comparisons between different approaches to procedural education. Using a mixed methods design offers greater insight into the reasons underpinning differences in procedural exposure between genders. In addition, in contrast to previous studies, residents' procedures were measured on the basis of chart documentation rather than self-reports.

The study also has limitations worth discussing. Procedural volume is a measure of exposure, not a measure of competence (7). Therefore, it cannot be assumed on the basis of the study results that residents from different genders reached different levels of competence. Olson and colleagues also focused on residents' perspectives only, without capturing the views of their supervisors and healthcare teams. In addition, the authors reported gender as a binary variable with no information on the gender of supervisors within each ICU team. These factors limit the interpretation of the findings.

The study results indicate that gender disparities in accessing procedures during IM training are rooted in sociocultural influences that affect medical trainees' beliefs, attitudes, and behaviors well before residency training, highlighting the need for intervention at the early stages of medical training. We must also assume that gender biases impact every aspect of the training experience for all genders (8, 9). Although this study raises concerns regarding women's access to procedural training, one could imagine that women may be penalized in other educational domains and that men may also receive less exposure to certain clinical activities (e.g., family meetings). These are vital questions that should be addressed in future research. Additional areas of reflection emerge from the study findings. Olson and colleagues

raised the question of whether the allocation of procedures during ICU rotations should be based on a structured adjudication system that best addresses individual procedural learning needs rather than being determined by resident confidence or self-advocacy. Increased confidence among men trainees has been identified as a potential contributor to differences in the number of procedures performed by men and women in other specialties (10), and a perceived lack of procedural confidence among women residents may be misinterpreted as a lack of competence by supervisors (11). Because confidence is a poor surrogate for competence (7), procedural distribution based on confidence may also represent a threat to patient safety and underscores the need for explicit supervision rules and consistent enforcement by supervisors.

Besides the problem of gender inequity in procedural access, careful attention should be paid to the fact that a minority of residents actually completed the minimum number of procedures required by their training program during their ICU rotations. Limited opportunities for residents to perform ICU procedures is not an educational challenge unique to a few training sites (12), which explains in part why the American Board of Internal Medicine no longer requires completion of a minimum number of invasive procedures for certification in IM (13). Yet, many North American IM training programs continue to expect residents to achieve specific targets for ICU procedures. The present study revealed that unstructured ICU rotations might not provide IM trainees of any gender with sufficient procedural exposure, including opportunities for direct assessment and feedback by senior physicians. This is potentially problematic if we endorse that 1) all IM residents should achieve competence in routine ICU procedures and 2) a busy,

unstructured ICU rotation is the best and primary strategy for trainees to master these skills. Assessing competence necessitates direct observation by senior clinicians during routine and on-call activities, a process far more complex than simply documenting the number of procedures performed. Formalizing procedural training through procedural rotations or hybrid programs, including simulation-based training (14, 15), for example, may be required to provide both sufficient exposure and appropriate assessment.

Although worthy of consideration, these solutions present their own challenges. Alternatively, we propose that the core objectives of an ICU rotation for IM trainees should markedly shift from procedural skills acquisition toward other learning goals, such as recognition and stabilization of sick patients, physicians' roles within an interdisciplinary team, and end-of-life care communication. These are clinical skills that any internist will require in their future practice and competencies that IM trainees should primarily aim to develop during ICU training.

A greater focus on the nonprocedural aspects of critical care medicine may also encourage more trainees of all genders to pursue a career as an intensivist. The present study revealed that women trainees struggled to perceive themselves as "proceduralists."

Although we agree with the authors that increased representation of women in critical

care is essential to provide a greater diversity of role models for trainees of all genders, we also believe that deemphasizing the procedural aspect of the specialty would be a valuable strategy to attract trainees who tend to prioritize and excel in relationship building, complex problem solving, or care coordination, for example.

It is also critical to consider the numerous organizational and sociocultural factors that inform career choices, including perceived professional well-being, work schedules, earning potential, and so forth (16). These factors may be distinctly valued by trainees of different genders and should be addressed to minimize gender imbalance within the critical care profession (17). The coronavirus disease (COVID-19) pandemic has emphasized aspects of our practice that may dissuade prospective critical care physicians, such as high levels of burnout, personal health risks, and ethical dilemmas (18–20).

A major cultural shift toward valuing healthcare professionals' well-being as well as patients' care experience, and the intentional rebranding of critical care as a rich and complex (rather than mainly procedural) specialty, will contribute to attracting an increasingly diverse group of trainees to critical care medicine.

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