Trainee Autonomy and Patient Safety

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Keywords: autonomy, patient safety, performance assessment, SIMPL, surgical education

(*Ann Surg* 2017;xx:xxx–xxx)

The ultimate goal of surgical residency must be to train surgeons who are safe and independent. There is accumulating evidence that many graduating residents have not achieved that goal.[1–3] Although the precise reasons for these findings remain unknown, elements such as the 80-hour work-week, increased faculty-to-resident ratios, and reduced experience with open operations have all been hypothesized to play a role.[4] Recently, the erosion in resident autonomy has received increased attention.[5,6]

Patient expectations and the health care system have both undergone dramatic change over the past 30 years, change that has put pressure on the traditional Halstedian model of progressive resident independence. For example, graduated independence has been diminished by changes designed to enhance patient safety, including limits on concurrent surgery and rules mandating specific supervisory behaviors by attendings. These rules are often made because patients, administrators, and payers assume that patient outcomes are universally improved with less resident autonomy, despite the lack of any evidence that appropriately supervised residents are unsafe. The impact of these changes is compounded by growing clinical productivity expectations for academic surgeons. If a supervising surgeon must increase their productivity but is not permitted to delegate responsibility, the expected outcome is less resident autonomy. As a result, senior residents today usually perform the critical portion of procedures with the attending scrubbed and guiding the operation.[1]

The potential long-term consequences of these changes are troubling. Patient safety is a genuinely vital concern of the present, but new policies must also account for the role that graduated responsibility plays in achieving that same goal in the future. A myopic pursuit of safety at the expense of learning threatens to produce future surgeons who are less competent. While the short-term priorities of our current health care system are important, if they undermine the training process, then these priorities are unsustainable. To realize these goals over the long-term, we must critically assess the amount and impact of progressive autonomy granted to residents during their training.

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Funding for this study was provided by Northwestern University; Indiana University; Massachusetts General Hospital; State of Illinois; American Board of Surgery; Procedural Learning and Safety Collaborative.

The authors report no conflicts of interest.

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ISSN: 0003-4932/16/XXXX-0001
DOI: 10.1097/SLA.0000000000002599

THE SIGNIFICANCE OF RESIDENT AUTONOMY

Operating on any patient is a privilege and residents must earn that responsibility through industrious preparation. They should have no expectation of complete independence, as it is the ethical, institutional, and legal duty of attending surgeons to supervise trainees at all times. But we must be careful to distinguish supervision from guidance. Supervision is the responsibility that an attending surgeon has to a patient to ensure that they receive the highest quality care from all members of the team—even if the surgeon is not physically present. Guidance (and its inverse, autonomy) relate to the provision of direct assistance by an attending to a trainee for the purposes of teaching. In our usage here, neither autonomy nor guidance have any relation to supervision other than to indicate that supervision may be provided with more or less direct participation by faculty. Trainees should be granted only as much autonomy—again, supervised—as they can be expected to manage safely.

For those trainees who are prepared, greater autonomy brings 3 main benefits. First, autonomy has important effects on learning and professional attitudes. These effects are mediated in part through intrinsic motivation, which is markedly enhanced by autonomy-supportive contexts.[7] For example, knowing that one's operative plan will actually be implemented tends to focus the learner's attention in a way that passive participation will not. Furthermore, seeing the consequences of one's actions not only improves learning but also cultivates a sense of purpose, commitment, and responsibility. These are the same professional attributes that are sometimes identified as lacking in recent graduates.[8] Further reductions in resident autonomy are unlikely to improve the situation.

Second, progressive autonomy is important because residents should be expected to demonstrate readiness for independent practice before graduation.[9] As others have pointed out,[4] it is illogical to deem residents as being ready for independent practice on the day they graduate when they were deemed otherwise 1 day prior. If we could design the ideal educational system, the supervised transition from residency to independent practice would be a smooth curve of progressively less guidance.[10] In reality, that transition can be very abrupt.[11] This abruptness may explain why many trainees lack confidence that they will be competent by the time they graduate.[3] While the transition to practice has always been challenging, the diminished autonomy of the current generation of residents makes that transition more difficult.

Lastly, senior residents should be provided with experiences that mimic independence because many advanced skills can be practiced only when a resident is allowed to direct an operation. For example, residents must practice how to set up the optimal exposure, work with an assistant, and effectively communicate with the anesthesia team. Without rehearsal, expertise is not possible.[12] If residents are relegated to practicing only the basic technical skills (cutting, tying, etc), then they are really just learning to be a first assistant. They might function as a highly skilled and capable first assistant, but they are an assistant nonetheless.

Despite these considerations, one must be careful not to overemphasize the importance of autonomy. Too much autonomy too early is almost certainly detrimental to both learning and patient safety,[13] both of which can be expected to improve with the teaching

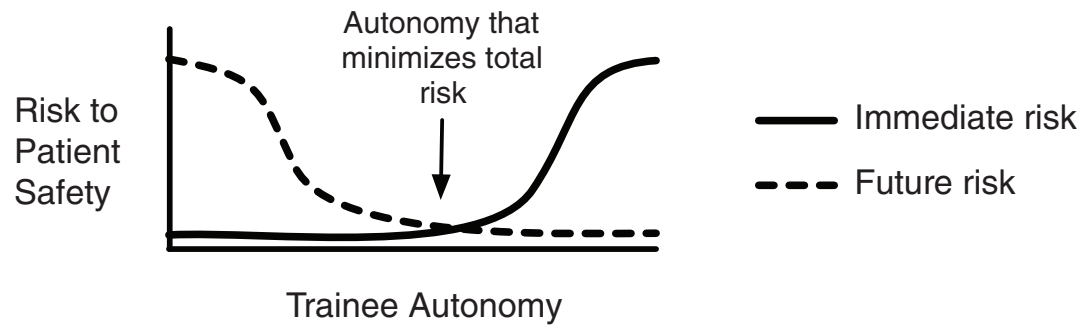

FIGURE 1. The precise relationship between the autonomy granted to trainees and the risks to patient safety are unknown yet are most likely nonlinear. Limiting trainee autonomy could be expected to somewhat reduce the immediate risk of complications, especially if one avoids granting maximum autonomy to a trainee who is not competent. Similarly, too limited autonomy during training is expected to compromise trainee learning and therefore increase the risk to the patients treated by those physicians after they enter practice. One might hypothesize, however, that there is a zone of autonomy that presents minimal risks to patients both immediately and in the future. It is this zone that we must define and to which faculty teaching should be targeted. Doing so protects the safety of all patients.

and participation of a more experienced surgeon. Instead, we must strive to achieve the optimal amount of autonomy while maintaining appropriate faculty supervision. But what is the optimal amount of autonomy? Unfortunately, we do not yet know, although preliminary data do suggest that even the expected amount of independence is rarely achieved.[6]

OPTIMIZING BOTH TRAINEE LEARNING AND PATIENT SAFETY

An ideal educational system would use objective measures of performance to determine the optimal level of autonomy that should be provided to a given trainee for a given procedure for a given patient. Unfortunately, we cannot yet determine the ''optimal'' amount of resident autonomy because we know very little about the relationship between resident autonomy, learning, and a more holistic conceptualization of patient safety. By ''holistic,'' we mean that patient safety goals must account for both short-term outcomes associated with trainees and future outcomes attributable to early career surgeons.[5] Achieving this understanding will require new ways to measure the performance of individual residents, the amount of autonomy they achieve, and ultimately the outcomes of those patients they treat during residency and beyond. Eventually, these types of performance metrics could serve as the methodological basis for defining norms, setting standards, and implementing a true competency-based curriculum.[9]

For these and other reasons, there have been multiple calls for residency programs to collect longitudinal resident performance data.[9,10] As an important first step, the ACGME has implemented more frequent resident evaluations within the context of the Milestones Project.[14] More recently, a consortium of teaching hospitals (organized as members of the Procedural Learning and Safety Collaborative, http://www.procedurallearning.org) has developed a smartphone-based assessment tool that makes it feasible to implement more frequent assessment using a 3-question ''micro-evaluation.''[15] Data from this or a similar tool could help supervising faculty target the optimal amount of autonomy (see Fig. 1). For example, before starting a procedure, an attending could look up how much guidance a trainee required for prior procedures of a similar type. They could use that information to better individualize their teaching, thereby elevating the performance of those trainee surgeons in the future without compromising patient safety today. Assessment is the key to this entire process.

ADDRESSING OTHER BARRIERS TO GRADUATED AUTONOMY

Although more frequent longitudinal assessment is important, other strategies are also needed to protect graduated resident autonomy. Most immediately, faculty should continue to provide progressively less guidance as residents demonstrate competence. While it is rarely appropriate for residents to struggle alone in the operating room (OR), there is an underappreciated intermediate stage where supervising faculty surgeons act as a capable—yet relatively silent—first assistant.[11] More generally, as a profession, we must also challenge the forces that are acting to diminish the role of surgical residents in the OR. For example, increasingly prescriptive rules that dictate precise supervisory behaviors of faculty should be critically assessed for their impact on the ability of residents to be practice-ready by the time they graduate. Progressive autonomy might also be improved if incentives for surgical teaching faculty were better aligned not only with clinical service goals but with trainee educational goals as well.

CONCLUSION

Erosion of graduated responsibility carries substantial risk to the future of the surgical profession. To mitigate this risk, we must define minimum technical standards, systematically measure resident performance, and ensure that residents have increased autonomy as they demonstrate competence. This would ensure that early career surgeons have the capacity to safely operate without being guided through every operation. Anything less and we have compromised the safety of future patients.

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