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## PRESS REVIEW

# Press review No. 4

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### ■ Association of expectations of training with attrition in general surgery residents

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<https://doi.org/10.1001/jamasurg.2018.0611>

#### Importance

Attrition from general surgery training is highest during internship. Whether the expectations and attitudes of new trainees affect their subsequent risk of attrition is unknown.

#### Objective

To identify the expectations of general surgery residency associated with attrition from training.

#### Design, setting and participants

This prospective observational cohort study included categorical general surgery interns entering training in the 2007–2008 academic year. Residents were surveyed regarding their expectations of training and of life as an attending at the start of their intern year (June 1 to August 31, 2007). Expectations were grouped into factors by principal component analysis and a multivariable model was created using these factors in addition to known demographic and program characteristics associated with attrition. Follow-up was completed on December 31, 2016.

#### Main outcomes and measures

Attrition from training was determined by linkage to American Board of Surgery resident files through 2016, allowing 8 additional years of follow-up.

#### Results

Of 1048 categorical surgery interns in the study period, 870 took the survey (83.0% response rate) and 828 had

complete information available for analysis (524 men [63.3%], 303 women [36.6%] and 1 missing information [0.1%]). Most were white (569 [69.1%]) and at academic programs (500 [60.4%]). Six hundred sixty-six residents (80.4%) completed training. Principal component analysis generated 6 factors. On adjusted analysis, 2 factors were associated with attrition. Interns who choose their residency based on program reputation (factor 2) were more likely to drop out (odds ratio, 1.08; 95% CI, 1.01–1.15). Interns who expected as an attending to work more than 80 hours per week, to have a stressful life, and to be the subject of malpractice litigation (career life expectation [factor 6]) were less likely to drop out (odds ratio, 0.90; 95% CI, 0.82–0.98).

#### Conclusions and relevance

Interns with realistic expectations of the demands of residency and life as an attending may be more likely to complete training. Medical students and residents entering training should be given clear guidance in what to expect as a surgery resident.

#### Comments

- This is a hot topical issue. The study is well done and is sound from a methodological standpoint (prospective study). Finally, the 83% participation rate of general surgery interns is remarkable for a study based on an auto-questionnaire, underscoring the value of this study along with the determination of the investigators that ran it.
- We owe it to our future interns to tell them the task of becoming a surgeon is difficult, stressful, requires a lot of work, and is full of problems... blood, sweat and tears, certainly... we cannot say the contrary, the results of this study show it. But, we are not obliged to agree with everything. This message may seem outdated to enhance the attractiveness of our profession. Our discipline lacks attractiveness, yet it is so rich, so varied, and in constant evolution... It is certainly possible in the future, without

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grandstanding, to attract new student profiles, different from monk-soldiers... and this has already started with the feminization of our profession.

- The survey was conducted through an auto-questionnaire that by definition is limited because all the possible expectations and the reason for the choice of the interns were not explored. Other aspects such as a taste for manual work, or for research or new ideas, were not explored. In fact, the questions focused only on the arduousness of the profession.
- The study targets interns in general and gastro-intestinal surgery, but it would be of interest to learn about what interns in other disciplines think and to learn whether the factors for attrition are similar, and therefore, is attrition most likely a generational phenomenon? Or, are the factors specific to general and gastro-intestinal surgery, reinforcing the argument that we must think more about the way we work or at least the way our profession is perceived by the younger generation.

*For more on this topic*

Arch Surg 2012;147(9):829–833.  
Ann Surg 2010;252(3):529–534.

#### ■ Perfect registration leads to imperfect performance: A randomized trial of multimodal intraoperative image guidance

Ann Surg 2018. [Epub ahead of print]  
<https://doi.org/10.1097/SLA.0000000000002793>

##### *Objective*

To compare surgical safety and efficiency of two image guidance modalities, perfect augmented reality (AR) and side-by-side unregistered image guidance (IG), against a no guidance control (NG), when performing a simulated laparoscopic cholecystectomy (LC).

##### *Background*

Image guidance using AR offers the potential to improve understanding of subsurface anatomy, with positive ramifications for surgical safety and efficiency. No intra-abdominal study has demonstrated any advantage for the technology. Perfect AR cannot be provided in the operative setting in a patient; however, it can be generated in the simulated setting.

##### *Methods*

Thirty-six experienced surgeons performed a baseline LC using the LapMentor simulator before randomization to 1 of 3 study arms: AR, IG, or NG. Each performed 3 further LC. Safety and efficiency-related simulator metrics and task workload (SURG-TLX) were collected.

##### *Results*

The IG group had a shorter total instrument path length and fewer movements than NG and AR groups. Both IG and NG took a significantly shorter time than AR to complete dissection of Calot triangle. Use of IG and AR resulted in significantly fewer perforations and serious complications than the NG group. IG had significantly fewer perforations and serious complications than the AR group. Compared with IG, AR guidance was found to be significantly more distracting.

##### *Conclusion*

Side-by-side unregistered image guidance (IG) improved safety and surgical efficiency in a simulated setting when compared with AR or NG. IG provides a more tangible opportunity for integrating image guidance into existing surgical workflow as well as delivering the safety and efficiency benefits desired.

##### *Comments*

- Several new technologies have made their way into the operating room today: technologies based on intra-operative imaging, robot-assisted surgery, intra-operative navigation and image fusion techniques. The question posed by this study is very pertinent: what exactly can really help the surgeon?
- The study methodology is very good; randomization between three groups is appropriate. Another option might have been to perform a crossover study and to ask all surgeons to perform the three types of procedures.
- Although the study was conducted on a simulator and the transitivity to clinical practice is not systematic, these results clearly dampen the current enthusiasm that hovers over new technologies and augmented reality in particular. Indeed, the value of augmented reality is limited in several aspects, and was even found to be deleterious for certain parameters.
- This study shows fairly well the risk associated with augmented reality, that is that imaging is distractive for the surgeon. The images are very enticing but essential details may easily be missed.

*For more on this topic*

Hughes-Hallett AM, Mayer EKP, Marcus HJM, et al. Quantifying innovation in surgery. Ann Surg 2014;260:205–211.  
Nicolau S, Soler L, Mutter D, et al. Augmented reality in laparoscopic surgical oncology. Surg Oncol 2011;20:189–201.

#### ■ Resection of the primary gastrointestinal neuroendocrine tumor improves survival with or without liver treatment

Ann Surg 2018. [Epub ahead of print]  
<https://doi.org/10.1097/SLA.0000000000002809>

##### *Objective*

The aim of this study was to determine outcomes of primary tumor resection in metastatic neuroendocrine tumors across all primary tumor sites.

##### *Background*

Primary tumor resection (PTR) may offer a survival benefit in metastatic gastrointestinal neuroendocrine tumors (GI-NETs); however, few studies have examined the effect of primary site and grade on resection and survival.

##### *Methods*

This is a retrospective study of patients with metastatic GI-NETs at presentation between 2005 and 2011 using the California Cancer Registry (CCR) dataset merged with California Office of Statewide Health Planning and Development (OSHPD) inpatient longitudinal database. Primary outcome was overall survival (OS). Univariate and multivariate (MV) analyses were performed using the Pearson Chi-squared tests and Cox proportional hazard, respectively. OS was estimated using the Kaplan–Meier method and log-rank test.

##### *Results*

A total of 854 patients with GI-NET metastases on presentation underwent 392 PTRs. Liver metastases occurred in 430 patients; 240 received liver treatment(s). PTR improved OS in patients with untreated metastases (median survival 10 vs 38 months,  $P < 0.001$ ). On MV analysis adjusted for demographics, tumor stage, grade, chemotherapy use, Charlson co-morbidity index, primary tumor location, or treatment of liver metastases, PTR with/without liver treatment improved OS in comparison to no treatment [hazard ratio (HR) 0.50,  $P < 0.001$  and 0.39,  $P < 0.001$ , respectively]. PTR offered a survival benefit across all grades

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