Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.
specific to their needs or not relevant to surgical training settings. No statistical difference was observed between women and men related to leadership experiences or cited barriers.

**CONCLUSION:** Skill-based training in effective communication and team leadership may help prepare chief residents to meet their responsibilities. Obtaining feedback on performance is a commonly cited barrier.

---

**Live-streaming Intraoperative Teaching for Novel Thoracic Surgery Technology**

**Shawn M. Purnell, MD, Min P Kim, MD, FACS, Ray K Chihara, MD, Edward Y Chan, MD, FACS, Shawn M. Purnell, MD, Min P Kim, MD, FACS, Baystate Medical Center, Springfield, MA**

**INTRODUCTION:** The COVID-19 pandemic has forced surgical educators to adopt new platforms for teaching. Evolving technologies in thoracic surgery require continuing education to the highest level of care. Our aim was to assess the safety, feasibility, and effectiveness of live-streaming surgery in teaching novel technology to practicing surgeons.

**METHODS:** Practicing physicians (n=32) participated in a virtual course on electromagnetic localization for lung nodules. Each group of three learners participated in preoperative discussion, an interactive HIPAA-compliant live-streamed operation, and postoperative debrief. Learners completed a 20-question survey.

**RESULTS:** All participants were satisfied to very satisfied with the virtual experience and 97% (n=31) agreed the video platform was easy to use. Most (94%) experienced good communication between the participants, but only 12.5% of learners often to always participated. On a 1-5 Likert scale with 5 being completely satisfied, learners rated the audio quality as 4.5 and the video as 4.3. Nineteen percent of the learners experienced audio interruptions and 28% experienced video interruption during the virtual course. No respondents felt that the live-stream created a distraction during the procedure and no participants felt that the technology posed a safety risk (0%).

**CONCLUSION:** Live-streaming intraoperative teaching is a safe, feasible and effective means to teach novel technologies to practicing surgeons. Improvements can be made in audio and video connectivity as well as developing tools to engage more of the learners in discussion. Future directions will focus on surgeons’ adoption of technology in their own practice and their comfort with the new technology.

---

**Resident Case Logs: The Untold Story**

**Ruchi Thanawala, MD, MS, Jonathan Jennek, PhD, Rebecca Rice, MD, Neale E Seymour, MD, FACS, Oregon Health and Science University, Portland, OR, Firefly Lab, Portland, OR**

**INTRODUCTION:** Underlogging of resident operative cases is a threat to understanding operative experience and informing status of skill acquisition. The identification of unlogged operations after the fact is limited by a lack of systematic, centralized methods for capturing original case assignments. Use of machine intelligence in tracking logging events can help define problems and improve logging compliance.

**METHODS:** Case assignments at two surgery residencies from October 2016 to February 2021 were reviewed. On a daily to weekly basis, chief residents entered assignments into a HIPAA-compliant, web-based education management platform with subsequent corrections for cancellations, add-ons, and schedule changes. Assignments were linked to each resident’s ACGME case log utilizing intelligent fuzzy matching by location, date, case ID, staff, and procedures. Extracted data consisted of percentage of assigned but unlogged cases, matched to residents’ default logging behavior, with or without the platform’s automated logging assistance.

**RESULTS:** 43,073 case assignments for 132 trainees were reviewed. With direct ACGME case log access residents logged only 70% of assigned cases. Platform access-aided logging rate was 90% (X;2 test p-value < 0.000001).

**CONCLUSION:** 30% of cases were unlogged for residents who accessed the ACGME case log system directly. Use of a centralized platform and machine intelligence to maintain the historical record of assigned cases reduced this to 10.5%. We conclude that under-reporting of resident operative experience using traditional direct access to ACGME logging can be improved using an intelligent platform to manage both case assignments and logging.

---

**Resident Literature Review for Complication Presentations: A Sisyphean Task**

**Alexandros N Flaris, MD, MSc, Christopher J Carnabatu, MD, Rebecca W Schroll, MD, FACS, Mary T Killackey, MD, FACS, Tulane University School of Medicine - General Surgery Department, New Orleans, LA**

**INTRODUCTION:** Morbidity and Mortality (M&M) complication presentations include a thorough literature review. This requires a significant amount of time seldom compatible with the current work hours endured by surgical residents. Additionally, literature reviews can become repetitive for commonly encountered complications. The goal of this study was to find (a) the amount of time surgery residents spend performing literature reviews and (b) the number of presented complications that are repetitive.

**METHODS:** A survey was sent out to 29 clinically active General Surgery residents in May 2020 to determine the time spent on literature reviews as well as their degree of thoroughness. The M&M presentations for that academic year were indexed, and the proportion of complications having occurred more than once calculated.

**RESULTS:** Most residents (17/29, 58.6%) reported dedicating approximately one hour performing literature reviews. Mean