



Optimizing Certification in Congenital Cardiothoracic Surgery: Addressing Technical Skills and Quality Assurance

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ABSTRACT

In the tumult of chaos, lies a hidden harmony waiting to be unveiled. This abstract delves into the paradoxical nature of chaos, where amidst disorder, there exists an innate tendency towards self-organization and coherence. Drawing from mathematics, physics, and complexity theory, it illuminates the underlying patterns governing complex systems. From the fractal geometry of nature to the emergent behaviour of neural networks and collective dynamics of flocking birds, chaos theory reveals a universe teeming with intricate structures. This inquiry into chaos and order invites a journey of wonder, exploring the delicate balance between randomness and predictability that shapes the fabric of reality.

Keywords: Congenital cardiothoracic surgery, Technical skills assessment, Certification procedures, Simulation-based education

Introduction

Cardiothoracic surgery stands out as one of the most technically challenging surgical fields. Presently, the certification procedure for congenital cardiothoracic surgery consists of a written exam (the American Board of Thoracic Surgery congenital qualifying examination) assessing knowledge depth and critical thinking abilities. Additionally, an oral exam (the American Board of Thoracic Surgery congenital certifying examination) appraises critical thinking and judgment. However, there lacks a structured examination mechanism to specifically assess technical skills for ultimate certification.

Today's world, people expect top-notch results even when dealing with complicated health issues. Doctors and medical programs are under more scrutiny than ever, with a push for transparency and sharing of outcomes. If a surgeon or program isn't performing well, there's pressure to help them improve or even consider consolidating medical practices to ensure doctors get enough practice. What's new is that regular folks now have a say in decision-making groups

for medical societies and committees, offering perspectives that doctors might miss. Ultimately, it's our duty to give patients the best care possible and keep getting better at it, which means making sure doctors in training are really good at what they do before they get certified [1-5].

As the way doctors work changes, so does the way they're trained, including learning through competency-based education. People expect a lot from doctors, so there are talks about improving how they get certified by looking at how well they perform surgeries. Since being good at surgery is super important, some think we should have a fair way to measure how good someone is at it. The tricky part is finding a way to do this that's fair and doesn't take up too much time or money for the trainees and evaluators. Until now, doctors in training mostly got evaluated subjectively by their program's teachers and director during their residency. But with society wanting surgery to be nearly perfect and programs having to share their results publicly, maybe we should add another part to the certification process that checks how well someone can do surgery. Think about other jobs, like pilots, where they have to

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show they're really good at what they do through tests and simulations to get certified and keep their certification.

As we strive to enhance our expertise in clinical care, it's imperative to enhance our methods for educating the upcoming cohort of surgeons. This task is becoming more challenging due to heightened scrutiny of outcomes, increasing specialization in intricate procedures, the integration of new technologies, and restrictions on duty hours. Simulation, when utilized adeptly, can play a significant supporting role, particularly as a means of deliberate practice in honing skills. Additionally, it could serve as an objective assessment tool during certification, thus offering a more thorough evaluation of trainees [6,7].

Hussein and colleagues' study shows that making 3D printed model can help assess how well surgeons perform a tricky heart operation called the arterial switch. Instead of just relying on experts to judge skill, they also trained non-doctors to give feedback. The study found that this grading system can effectively tell apart experienced surgeons from new ones, and that both doctors and non-doctors can use it reliably, although non-doctors may have a bit more difficulty. This research marks a good start in creating a fair and consistent way to measure surgical skills in heart surgeries for babies. However, there are still some challenges to tackle, like the cost and time of making the 3D models, the models not perfectly matching real baby hearts, and the limited use of the models for certain heart surgeries. But with better camera techniques, even tricky parts of the heart could be evaluated more accurately in the future [8].

While technical proficiency is a crucial aspect of a surgeon's competency and overall performance, being a "good" surgeon encompasses more than just technical prowess. Exceptional surgical outcomes stem from a blend of various factors such as intellect, critical thinking, judgment, resilience, and emotional intelligence. While intellect and technical skills can be honed early in one's career through dedicated reading and deliberate practice, advanced critical thinking, intricate decision-making, and sound judgment are cultivated through clinical experience that develops over time. For instance, the ability to make preoperative decisions, including patient selection and surgical planning, significantly influences surgical outcomes. Successful

surgeons demonstrate adeptness in handling unexpected discoveries during surgery, rectifying errors, managing complications, and effectively navigating emergencies both in and out of the operating theater. These competencies are honed through progressive and cumulative experience. While assessing technical proficiency is important, it is just one component among many that contribute to a surgeon's overall success [8, 9].

While this study represents a significant stride towards a more thorough evaluation of surgeon proficiency, critical questions linger regarding the most suitable methods and their integration into the congenital certification procedure. Determining the threshold for 'adequacy' poses a challenge, as does devising remedial measures for trainees falling below acceptable standards. Given the diverse spectrum of congenital cardiothoracic procedures, determining which operations warrant testing and securing funding for such assessments present further complexities. Additionally, the responsibility for evaluation, the timing of testing vis-à-vis fellowship completion, and the identification of assessment components with strong predictive validity for future operating room performance are pivotal considerations. Furthermore, alternative approaches for evaluating technical skill merit exploration. For instance, assessing a trainee's performance through a video of a predetermined case at their institution, evaluated by experts using an objective rubric, could offer a more comprehensive and realistic appraisal of technical prowess. This method could also capture other vital aspects of surgical performance like communication, emotional intelligence, and intraoperative decision-making. Moreover, incorporating an operative case log to record morbidity, mortality, and hospital stay duration, akin to practices in other specialties, should accompany technical performance evaluations.

Similar to the challenges faced in congenital certification, numerous uncertainties persist regarding the evaluation of technical proficiency for cardiothoracic certification. While many questions remain unanswered, it is evident that the integration of a technical performance assessment tool is imperative to enhance our current certification process and advance the quality of future surgeons.

References

1. Backer, C. L., Pasquali, S. K., & Dearani, J. A. Improving national outcomes in congenital heart surgery: the time has come for regionalization of care. *Circulation*, 141, 943-945(2020).
2. Dearani, J. A. Transparency and public reporting: beyond the gathering storm. *World J. Pediatr Congenit Heart Surg.* 11, 9-13(2020).
3. Nasca, T. J., Philibert, I., Brigham, et al. The next GME accreditation system—rationale and benefits. *N Engl J Med.* 366, 1051-1056(2012).
4. Sommer, K. J. Pilot training: What can surgeons learn from it?. *Arab J Urol.* 12, 32-35(2014).
5. Watson, D. R., Flesher, T. D., Ruiz, et al. Impact of the 80-hour workweek on surgical case exposure within a general surgery residency program. *J Surg Educ.* 67, 283-289(2010).
6. Dearani, J. A., & Stulak, J. M. Commentary: In surgical training, practice makes... almost perfect. *J Thorac Cardiovasc Surg.* 158, e15-e16(2019).
7. Buyske, J. Forks in the road: the assessment of surgeons from the American Board of Surgery perspective *Surg Clin.* 96, 139-146(2016).
8. Hussein N, Lim A, Honjo O, et al. Development and validation of a procedure-specific assessment tool for Hands-On Surgical Training (HOST) in congenital heart surgery. *J Thorac Cardiovasc Surg.* 160:229-241(2020).
9. Fried MP, Gallagher AG, Satava RM et al. Training to proficiency: aircraft to OR. *Arch Otolaryngol Head Neck Surg.* 130:1145-1146(2004).