

Assessing Residents' Readiness for OR Autonomy: A Qualitative Descriptive Study of Expert Surgical Teachers' Best Practices

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PURPOSE: Providing resident autonomy in the operating room (OR) is one of the major challenges for surgical educators today. The purpose of this study was to explore what approaches expert surgical teachers use to assess residents' readiness for autonomy in the OR. We particularly focused on the assessments that experts make prior to conducting the surgical time-out.

METHODS: We conducted semistructured in-depth interviews with expert surgical teachers from March 2016 to September 2016. Purposeful sampling and snowball sampling were applied to identify and recruit expert surgical teachers from general surgery residency programs across the United States to represent a range of clinical subspecialties. All interviews were audio-recorded, deidentified, and transcribed. We applied the Framework Method of content analysis, discussed and reached final consensus on the themes.

RESULTS: We interviewed 15 expert teachers from 9 institutions. The majority (13/15) were Program or Associate Program Directors; 47% (7/15) primarily performed complex surgical operations (e.g., endocrine surgery). Five themes regarding how expert surgical teachers determine residents' readiness for OR autonomy before the surgical time-out emerged. These included 3 domains of evidence elicited about the resident (resident characteristics, medical knowledge, and beyond the current OR case), 1 variable relating to attending characteristics, and 1 variable composed of contextual factors. Experts obtained one or more

examples of evidence, and adjusted residents' initial autonomy using factors from the attending variable and the context variable.

CONCLUSIONS: Expert surgical teachers' assessments of residents' readiness for OR autonomy included 5 key components. Better understanding these inputs can contribute to both faculty and resident development, enabling increased resident autonomy and preparation for independent practice. (J Surg Ed ■■■■-■■■. © 2017 Association of Program Directors in Surgery. Published by Elsevier Inc. All rights reserved.)

KEY WORDS: autonomy, faculty development, assessment, operating room (OR) teaching

COMPETENCIES: Professionalism, Patient Care, Medical Knowledge, Interpersonal Communication, Practice-based Learning

INTRODUCTION

Autonomy in the operating room (OR) is essential as a surgical trainee transitions to independent practice in surgery. The American College of Surgeons and the Accreditation Council for Graduate Medical Education have recommended several interventions to increase surgery trainees' preparedness for independent practice. These include redesign of the surgery residency and fellowship training model,^{1,2} implementation of Transition to Practice in General Surgery program,^{3,4} and use Focused Professional Practice Evaluations and Ongoing Professional Practice Evaluations to assess trainees' performance.² These interventions provide macrolevel perspectives for residency

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programs to seek effective curriculum and measurement methods that engender independent practice for residents. In practice, however, surgery residents' OR autonomy and independent practice are constrained by many practical issues, such as patient safety, situational uncertainty, and other factors affecting attending surgeons' motivation and determination.^{5,6} To address these challenges, surgery residency programs were encouraged to provide more faculty development about effective models of OR teaching and assessment for surgical faculty.^{7,8} But little empirical data exist to describe the curriculum of such faculty development programs and how attending surgeons employed these OR teaching models in their practice.

In the OR teaching environment, attending surgeons determine the teaching content and opportunities for a given resident.⁹ They have to consciously maintain a balance between the quality of patient care and the resident's needs for learning and being independent in the OR.^{10,11} Ten Cate introduced the concept of entrustable professional activities to support attending surgeons to entrust a resident with OR autonomy while balancing patient safety.¹² Entrustment decisions are built upon empirical facts and evidence. The essential connection between the evidence and the resident's opportunity of independent practice is the assessment approaches, which guide attending surgeons to evaluate residents' readiness and to entrust them with autonomy in the OR. Knowing these assessment approaches would be helpful for residents to develop their trustworthiness as well. However, little is known about the empirical assessment approaches used in the daily practice of attending surgeons who are expert teachers. Therefore, we conducted this study to explore what approaches attending surgeons use in practice to determine residents' readiness for OR autonomy. In this analysis, we focused on the assessments that attending surgeons make prior to conducting the surgical time-out in the OR.

METHODS

We conducted a qualitative interview study to elicit detailed descriptions of how attending surgeons made decisions about residents' level of autonomy in the OR. To elicit the best practice of assessing residents' readiness for OR autonomy, we recruited expert surgical teachers as our study subjects, for expert surgical teachers have richer knowledge and more detailed plans organized around developing residents' autonomy than do novice surgical teacher.¹³ Between March and September 2016, we used purposeful sampling and snowball sampling to invite expert surgical teachers to participate in semistructured individual interviews using the following 4 selection criteria: (1) evidence of leadership role in medical education at local or national level; (2) evidence of publications related to medical

education; (3) excellent reputation in OR teaching locally or regionally; and (4) actively practice in surgery. Surgeons who met at least 2 of the 4 criteria were eligible to participate. This study was exempted by our institutional review board (IRB).

Each individual interview with the expert surgical teachers took approximately 30 minutes to complete. An interview guide was developed, approved by research team members, and then pilot tested to ensure potential participants interpreted the questions in the manner intended. Interview questions were derived from the investigators' expertise, the goal of study, the literature, and the protocol from Artino.¹⁴ Since surgical time-out is conducted immediately before starting the invasive procedure or making the incision,¹⁵ we focused our analysis on the following 2 interview questions in this analysis: (1) How do you determine whether to allow a resident to perform as the primary surgeon? (prompt: what evidence is used?) (2) Is there any other evidence that affects your determination of a resident's autonomy? All interviews were audio-recorded, deidentified, transcribed and analyzed with online software program Dedoose (version 7.5.9; SocioCultural Research Consultants, LLC, Los Angeles, CA).

A previously developed category of entrustment evidence for resident autonomy (resident characteristics, medical knowledge, technical performance, and "beyond current OR case") was applied to code and analyze the data:

- Resident characteristics
 - *Training attributes*: a resident's training level (e.g., second-year resident), experience in similar procedures
 - *Personal efforts*: preparation for the operation, involvement in self-improvement of learning and skills (e.g., read the patient's x-ray images, know the specific step wanted to have feedback on)
 - *Attitude and motivation*: learning ownership, interest, attitude toward patient care (e.g., own the patient), willingness of teaching medical students
 - *Confidence*: feeling comfortable to perform
- Medical knowledge
 - *Basic knowledge*: anatomy, pathology, instrument/equipment names, and procedure steps
 - *Understand directions and instructions*: understanding of attending surgeon's guidance and vocabulary
 - *Operative plan, judgment, and instrument selection*: a complete operative plan, cognitive judgment, knowing the right instrument for the next step
 - *Teaching junior resident/medical student*: demonstration of talking medical student or junior resident through steps in the OR
- Technical performance
 - *Technical skills*: setting up the field, position the patient, instrument/tissue handling, basic operative techniques (e.g., suturing techniques).

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