

Transitioning from 1:1 to 1:2 Supervision in Anesthesia Training: A Descriptive Survey

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Original Article

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Abstract

Background: Advancement from 1:1 to 1:2 (attending to resident) supervision at the beginning of a CA-1 (clinical anesthesia) year can serve as a model for transition to milestone-based curricula. Currently most programs have an individual mixture of training and advancement criteria formed at the discretion of educational leadership. We designed a questionnaire to evaluate degree of variability at programs nationally.

Methods: After obtaining IRB approval, an anonymous survey was sent via Survey Monkey to all Anesthesiology Residency Program Directors with a link for faculty members. The survey remained open for 30 days and two reminders for completion were sent.

Results: Among responses from Program Directors, the following competency areas showed most agreement in being absolutely required for advancement: when to call an attending (78%), preoxygenation (60%), room preparation (81%), monitor placement (81%), machine check (77%), and airway assessment (73%). Responses from faculty identified as most important when to call the attending (82%), basic crisis management while waiting for help (64%), monitor placement (77%), machine check (79%), room preparation (77%), and airway assessment (66%).

Conclusions: There are no clear guidelines for transition from 1:1 to 1:2 supervision with wide variability in the design and requirements for the transition. With only modest agreement among and between Residency Program Directors and faculty members at this clearly defined transition, the challenges of implementation of milestones at every level are significant.

Key words: Competency-Based Education, Milestones, Clinical Competence

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Introduction

Graduate and undergraduate medical education has traditionally used a time or volume of case exposure model for advancement. However, it is increasingly clear that learners, and adult learners in particular, bring varying experiences and internal motivation, are individualistic and self directed. As such it has been suggested that we transition to “learner centered models” with teachers as facilitators for development of individualized learning plans¹. With the introduction of competency-based advancement, the ACGME acknowledged the need for a change in evaluation and advancement systems. The six competencies of patient care, medical knowledge, practice based learning, systems based practice, professionalism and interpersonal and communication skills were instituted for all programs by 2002². While the core competencies were meant to provide more objective advancement criteria, the advancement of residents as well as the evaluation of the quality of a graduate curriculum continues to remain largely time or case-volume based. Multiple evaluation techniques, such as faculty evaluations, 360° evaluations, and multiple choice examinations also play a role in advancement. In response, the ACGME implemented milestones: “competency-based developmental outcome expectations that can be demonstrated progressively by residents and fellows from the beginning of their education through graduation...”³ Task forces to develop milestones have been developed for each of the specialties included program directors, residents, specialty board representatives amongst others.

In anesthesia, most programs utilize a system of 1:1 coverage in the operating room with a CA-1 resident at the start of their training. Transitioning to 1:2 coverage is one of the first challenges that an anesthesia resident and the program face together. In light of the upcoming milestones for Anesthesiology training, achieving consensus within a program, much less amongst all programs, on specific knowledge, skills, and evaluation is paramount. The challenging transition from 1:1 to 1:2 supervision at the beginning of a CA-1 year can serve as a model. Currently most programs have an individual mixture of training, evaluation, and desired endpoints formed at the discretion of educational leadership of the institution. We developed a questionnaire in an effort to assess the frequency of commonly used criteria for the transition from 1:1 supervision to 1:2 supervision for CA-1s at programs nationally.

Methods

IRB approval was obtained at the University of California Los Angeles (UCLA) and University of California Irvine (UCI) for a descriptive survey. A modified Delphi technique⁴ was utilized to identify criteria for advancement. Current and prior program directors as well as senior faculty members at UCLA and UCI participated in the Delphi process. Characteristics were grouped into categories such as basic medical knowledge, basic technical skills, and basic crisis management skills. Additional topics that addressed ACGME Core Competencies of Interpersonal and Communication Skills, Systems-Based Practice, Professionalism, and Problem-Based Learning were also included (figure 1). Items were ranked on a five-point Likert scale with anchors of Absolutely Not Required, Likely Not Required, Neutral, Likely Required, and Absolutely Required. “Absolutely required” identifies performance items whose absence prevents trainees from advancing. There was also an opportunity for the clinician to give qualitative feedback.(appendix 1)

The survey was anonymously distributed via Survey Monkey to all Residency Program Directors. A survey link to forward to their fellow faculty members was included. The survey remained open for 30 days. Two reminders were sent for completion.

Results

Of the 132 surveys sent to program directors 34 were returned (26% response rate). Ninety nine faculty members responded. Percentages reported are the “Absolutely Required” response unless otherwise noted.

Current practices guiding transition from 1:1 to 1:2 supervision varies. 9/34 responding programs utilize time (expressed in number of weeks) to advance, while 12/34 also utilize cumulative faculty evaluations. Four Program Directors stated they had no specific criteria.

In “general” the faculty and the Program Director (PD) responses were similar. In defining the amount of time that should be required prior to advancement there was variation from 2 weeks to over 8 weeks with the majority (59% of PDs, 52% of faculty) stating 4-6 weeks. Results of cumulative faculty evaluations were absolutely required (44 % for PD and 37.9% for faculty) for advancement in less than half the programs.

Some basic characteristics showed agreement on being absolutely required while others did not have consensus. (Table 1). In terms of basic knowledge, preoxygenation was the only concept that was absolutely required by more than half, with 60% of PDs and 54% of faculty. Identifying the MAC of a volatile agent showed some agreement among the PD respondents (47% absolutely required), but there was much less agreement in identifying the mechanism of action and dose of induction agents (35%), muscle relaxants (35%) and narcotics (17%).

Technical knowledge items are absolutely required more frequently than medical knowledge (Table 2). However, there was little agreement in the skills of IV placement, LMA insertion, preoperative evaluation (including importance of exercise tolerance) being required.

In the category of critical events, more than half of respondents absolutely required management of hypoxia (56% of PD, 46% faculty), hypotension (53% of PD, 56% faculty), but there was little agreement on hypertension, judicious use of opioids, management of light anesthesia, and machine/equipment failure troubleshooting.

In the category meant to assess other ACGME Competencies, by far the most agreement was “knowledge of who the backup person is outside of the primary attending” (80%). Giving an organized “Situation, Background, Assessment, Recommendation (SBAR)”, completing an independent post-operative check, obtaining an informed consent, and reading at night were not required uniformly.

When comparing Program Director and faculty responses the only areas for difference were in Basic Technical Skills where more items were absolutely required for a majority of faculty than program directors. Faculty members have lower requirement of being prepared for individual cases as discussed in plan the night before as compared to Program Directors (52% vs. 81%)

Discussion

The results of our descriptive survey suggest that there is variability in the current practice of advancement and there is no consensus on a predefined time or faculty evaluations alone as being sufficient for advancement. This finding supports the ACGME transition towards competence- and milestones-based advancement.

In developing objective criteria, however, our survey suggests that there may be great variation in the criteria felt to be absolutely required. Basic medical knowledge, complete preoperative and postoperative evaluation for simple cases, and reading every night were not felt to be of importance. This was surprising as the Delphi technique at our institutions rated each of these as highly important characteristics in residents as they transition. It may be that absolute requirement is too high of a standard. We suggest that definitive objective criteria need to be developed that represent “absolute requirements” for advancement. The use of less stringent requirements may allow for more subjective evaluations.

It may be that the Delphi technique we used to develop the criteria did not yield categories that faculty and program directors at other institutions feel are key characteristics. This would point to the existing variation in expectations among institutions. However, given that we used two different institutions with a variety of experienced faculty, we feel that the Delphi technique yielded appropriate results. Additionally, there were not very many other areas that were identified in the qualitative section of the survey. It may be that faculty and program directors are still struggling to define what characteristics are important for transition at this phase. It would be interesting to repeat this survey in a few years, once faculty are more comfortable with milestone concepts.

One of the most significant weaknesses of this study is that response rates were low (34 Program Directors and 99 faculty Members). However, we use the data as being purely descriptive. We meant for this survey to be thought provoking and hypothesis generating at our institutions.

Anesthesia residencies are ready for milestones based advancement, which goes substantially beyond a one-size-fits-all advancement technique. Currently, most programs seem to use faculty evaluations and specific units of time to advance, however there is great variability in defining these. We would offer that a process be created to align the two so that milestones are met before advancement.

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Tables

Table 1 – Basic Global characteristics identified as absolutely required for advancement

Characteristic	Program Director	Faculty
Knowing when to call attending	78%	82%
Basic crisis management while waiting for help	60%	64%
Basic medical knowledge	23%	32%
Technical knowledge	30%	43%

Table 2 – Specific examples of technical knowledge absolutely required

Example	Program Director	Faculty
Operating room preparation	81%	77%
Monitor placement	81%	77%
Machine check	77%	79%
Airway assessment	73%	66%

Survey- Appendix 1					
Please indicate the amount of time that should be required before advancement from 1:1 to 1:2 supervision	2wks	4wks	6wks	other	n/a
Please rate the following characteristics based on their relevance to being able to move from 1:1 to 1:2 supervision.	absolutely not req.	likely not req.	neutral	likely req.	absolutely req.
Review of performance individually by program director					
Cumulative evaluations from faculty					
Basic Medical Knowledge					
Basic technical skills					
Firm understanding of when to call the attending					
Basic crisis management skills while waiting for help					
If you selected that basic medical knowledge is required for advancement, please rate the following characteristics based on their relevance	absolutely not req.	likely not req.	neutral	likely req.	absolutely req.
Understand the concept of preoxygenation					
Identify mechanism of action and intubating dose of Propofol and Succinylcholine					
Identify mechanism of action, induction and maintenance dose of an intermediate acting nondepolarizing muscle relaxant					
Identify mechanism of action and the postoperative dose of a mu agonist and an anesthetic					
Identify the MAC of a volatile agent					
Other- please describe in additional comments box					
If you selected that basic technical skills are required for advancement, please rate the following characteristics based on their relevance	absolutely not req.	likely not req.	neutral	likely req.	absolutely req.
Gather and present preoperative information					
Identify importance of exercise tolerance to qualifying anesthetic risk					
Access and assess prior anesthetic record					
Complete an airway assessment					
Be prepared for the case and know the plan that was discussed with attending the night before with or without a written aid					
Complete a thorough machine check					
Room Setup- airway, including suction, appropriate drugs					
>50% success rate in placing awake IV in a patient coming from home					
Attach monitors					

Identify and implement 2 strategies for failed one-handed mask ventilation					
LMA insertion					
Intubation					
Complete an anesthetic record in uncomplicate case with surgical time > 45 minutes					
Write basic PACU orders					
Mask ventilation - NOT IN ANY OTHERS					
IV insertion					
If you selected that critical events are required for advancement, please rate the following characteristics based on their relevance	absolutely not req.	likely not req.	neutral	likely req.	absolutely req.
Management of hypoxia (sat <95%)					
Management of hypotension (BP decrease of >20% from baseline or a SBP <80)					
Management of hypertension (BP increase of >20% or SBP >160)					
Judicious use of opioids					
Management of light anesthesia/undesired patient movement					
Proper dosing of neuromuscular blockers					
Machine/Equipment failure troubleshooting					
Other					
The following are criteria for advancement based on the ACGME Competencies of Interpersonal and Communication Skills, Systems Based Practice, Professionalism, and Problem-Based Learning. Please rate the following characteristics based on their relevance	absolutely not req.	likely not req.	neutral	likely req.	absolutely req.
Give an organized SBAR/PACU report including procedure, pertinent preexisting diseases, fluids and major pertinent intraoperative events					
Perform an independent postoperative check for an uncomplicated anesthetic					
Obtain an informed consent: be able to name 5 relevant potential complications after preoping with attending					
Identify and know how to contact first backup person if attending not immediately available					
Room is ready on time					
Read 20 minutes a night					
Identify sources for answering questions regarding anesthetic considerations, drugs, disease processes and surgical issues.					

Please check any criteria that are included in your department's specific policies for advancement from 1:1 to 1:2 supervision.
Specific unit of time
Review of performance individually by program director
Cumulative evaluations from faculty
Examination
Checklists
Simulation credentialing
No specific policy
Other (please specify)
If your program uses a specified unit of time, are residents required to remediate if other criteria are not met
No
Yes
N/A
Other
Which of the following outcome measures do you think are important to include in an "ideal" policy for advancement?
Specific unit of time
Review of performance individually by program director
Cumulative evaluations from faculty
Examination
Checklists
Simulation credentialing
If your program uses a specified unit of time, please describe the basis for the length of this unit of time.
Historic departmental experience
Evidence-based educational data
N/A