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Editorial

Increasing Critical Care Training to Advance Perioperative Medicine

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In 2005, Dr Ronald Miller presented the summary report of the Task Force on Future Paradigms of Anesthesia Practice.[1] He predicted that anesthesiologists would transition from specializing in operating room (OR) care to perioperative physicians. Per Dr Miller, "Anesthesia's increased role in perioperative medicine probably requires additional involvement in critical care. Specifically…a change in our residency[s] to augment the amount of critical care training."[(p22)] This stated requirement implies the need for increased output of trainees from anesthesiology critical care medicine (CCM) fellowships to provide leadership. Neither Dr Miller's stated nor unstated goals have been met. The impact of the coronavirus pandemic (COVID) and the production pressure for OR throughput that followed may have negatively impacted the transition to perioperative physicians.

Despite Dr Miller's recommendation, residency requirements have not changed. The American Board of Anesthesiology (ABA) requires a minimum of 4 months of CCM training but limits the amount of any subspecialty training during residency to 6 months.[2] Whereas 4 to 6 months can provide a background, it may be inadequate.

For anesthesiologists to lead in perioperative medicine, there must also be a significant increase in the number of critical care anesthesiologists (CCAs). Unfortunately, there has been a lack of impetus to train more CCAs. Per the Accreditation Council for Graduate Medical Education's Anesthesiology Program Requirements, "During at least two of the required four months of critical care medicine, faculty anesthesiologists experienced in the practice and teaching of critical care must be actively involved…"[3(p31)] Whereas this requirement indirectly places pressure on the anesthesiology community to train more CCAs, it hasn't provided adequate incentive to proportionately keep up with the increasing number of residency graduates. The number of CCA training positions has fluctuated from year to year but has not significantly increased. Not only has there been a lack of growth in training positions, but positions have also gone unfilled. The number of unfilled anesthesiology critical care fellowship spots has been significantly higher than the vacancy rate among surgical critical care fellowships recently (Table 1). The CCA vacancy rate is higher despite allowing emergency medicine physicians to fill anesthesiology critical care fellowships. There are several possible reasons.

One possible reason is a pay gap drawing anesthesiologists away from academic medicine and specifically from fellowships. Private practice salaries exceed academics, particularly compared with fellow salaries. Whereas this has affected many specialties, it appears to have hit anesthesiology harder in terms of filling critical care fellowships. The number of unfilled CCA positions is a stark contrast to the growth in anesthesiology core residency trainees recently (Table 2).

Burnout may also be deterring applicants to critical care fellowships or driving trained CCAs away from CCM. The COVID pandemic placed stress on anesthesiology departments to provide greater OR care as opposed to practicing as perioperative physicians and intensivists. This can potentially either pull CCAs away from time in the intensive care unit (ICU) or force them to work more OR hours in addition to critical care time. The clinical demand has led to physician burnout, which has hit CCAs especially hard. CCAs have reported the highest risk for burnout (77%) with the greatest rate of burnout syndrome (23%) among all subsets of anesthesiologists.[4] Both the pay gap and perceived burnout of CCAs may be deterring potential applicants. The goal to transform anesthesiologists into perioperative physicians has not been met by residency requirements nor by increased training of CCAs.

Two things may reinvigorate the critical care portion of the transformation into perioperative physicians. First, the amount of CCM required for anesthesiology residents must be meaningfully expanded. A challenge will be to increase the time spent in CCM while still allowing departments to meet clinical demand. One way to minimize the impact on OR throughput could be increasing the limit of 2 months of CCM during the first postgraduate year (PGY1). For every 2 additional months of required CCM, 1 of those 2 additional months could be allowed during PGY1 above the current limit of 2. Further, the 6-month maximum for time spent in any subspecialty should be lifted specifically for CCM. We suggest a new minimum of 6 months with up to 3 months during PGY1 and a new maximum of 9 months of CCM during residency.

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Second, we must increase the number of CCAs to drive education and advance perioperative medicine. Increasing the number of training positions will not likely increase the number of CCAs as currently available positions are not filling. We must reduce the financial detriment associated with additional time spent training. Whereas there may be several ways to do this, we offer 2. First, create combined anesthesiology residency and CCM fellowship programs that allow for completion of both in less than the currently required time. Currently, CCA fellows must spend "at least nine of the 12 months… in ICUs..."[5(p28)] When combined with the current requirement of 4 months of CCM training during an anesthesiology residency, the current minimum CCM training for a fellowship graduate is 13 months in the 60 total months of postgraduate training. A combined program could allow its trainees to spend 13 months of CCM training in a shortened overall training period. Of the 13 months, 7 would be spent during the first 48 months of training with up to 3 during PGY1. The trainee would then spend 6 additional months training in CCM between months 49 and 54. Graduates would meet the currently in effect minimum CCM requirements for both residency and fellowship. Shortening the time required might entice more applicants.

There is precedent for shortening combined training programs. There are currently ABA-approved combined programs with shortened total duration compared with completing the training programs separately. Trainees may currently complete a combined anesthesiology and pediatrics residency and may also attain additional certification in pediatric critical care medicine in 5 years. The 2 programs and 3 certifications would take far longer to achieve separately.

Another mechanism for addressing the financial barrier is offering stipends to fellows to reduce the pay gap. Most anesthesiology departments are unable to offer additional stipends in the current environment, but organized philanthropic efforts by national organizations could provide scholarships to individuals or endowments to universities to provide additional pay during fellowship. Alternatively, departments could also allow for 6 months of fellowship intermixed with 6 months of full anesthesiologist salary. Greater pay for fellows may help increase the number of CCAs.

Expanding the exposure of residents to CCM and increasing the number of CCAs are both essential. Recognizing the factors that have contributed to the current situation is critical. Finding a way forward is more important. We propose combined training programs with a shorter overall duration to reduce the financial detriment as well as greater remuneration for critical care fellows as remedies. A growth in the number of CCAs may also reduce their burnout to the benefit of all. Increasing the number of CCAs and increasing their time spent teaching anesthesiology residents can make residents feel CCM is a part of their practice, not just an off-service rotation.

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Tables

Table 1. *Unfilled Critical Care Medicine Fellowship Training Positions 2020-2024*

	Year				
	2020	**2021**	**2022**	**2023**	**2024**
CCA[a]					
Number of programs	58	58	63	61	64
Number of positions	214	230	238	225	226
Number (percentage) of positions unfilled	64 (30%)	42 (18.3%)	69 (29.0%)	89 (40.0%)	81 (35.8%)
SCC[b]					
Number of programs	138	140	153	164	173
Number of positions	276	290	315	340	355
Number (percentage) of positions unfilled	50 (18.1%)	13 (4.5%)	41(13.0%)	70 (20.6%)	83 (23.4%)
P value[c]					
	.003	<.001	<.001	<.001	.002

Abbreviations: CCA, critical care anesthesiology; SCC, surgical critical care.

[a] CCA data from SF Match Critical Care Anesthesiology Statistics. https://sfmatch.org/specialty/critical-care-anesthesiology-fellowship/Statistics. Accessed April 21, 2025.

[b] SCC data from Match Results Surgical Critical Care 2018-2025. https://www.nrmp.org/match-data/2024/02/results-and-data-specialties-matching-service-2024-appointment-year/. Accessed April 21, 2025.

[c] *P* value represents the comparison rate of vacancy of CCA to SCC positions.

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Table 2. *Growth in Anesthesiology Resident Training Positions Compared to Critical Care Anesthesiology Fellowship Positions 2020-2024*

	Year				
	2020	**2021**	**2022**	**2023**	**2024**
CCA fellows in training each year[a]	188	188	169	136	145
Anesthesiology residents in training each year[b]	6220	6371	6600	6824	7156

Abbreviation: CCA, critical care anesthesiology.

[a] Fellowship data from SF Match Critical Care Anesthesiology Statistics. https://sfmatch.org/specialty/critical-care-anesthesiology-fellowship/Statistics. Accessed April 21, 2025.

[b] Resident data from Association of American Medical Colleges Report on Residents. https://www.aamc.org/data-reports/students-residents/data/report-residents/2024/table-b3-number-active-residents-type-medical-school-gme-specialty-and-gender. Accessed April 21, 2025.