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Research Article

EVALUATING THE RELATIONSHIP BETWEEN CLINICAL COMPETENCY, REMEDIATION, AND CERTIFICATION SUCCESS IN ANESTHESIOLOGY RESIDENTS

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ABSTRACT

This cross-program study focused on analyzing the relationship between resident performance and graduation together with board certification. Documents on performance from ten years of data at four training programs were reviewed. The study looked at residents who began their training between 2000 and 2009, with all results being collected through February 2016. Those receiving assessments or steps from their Clinical Competency Committees were divided into groups based on their issues and then compared to those without obvious difficulties. The analysis involved 865 residents (from program cohorts with 127 to 275 students each). I found that 215 residents received a total of 405 formal actions taken by Clinical Competency Committees. Among participants, those with performance interventions had a higher chance of not completing their program (7% vs. 1%, P<0.001) and not receiving their board certification (11% vs. 1%, P<0.001). If a lack of just one critical Essential Attribute was noticed, as in ethical conduct, honesty, respectfulness or avoiding impairments, the percentage dropping out of high school was notable, falling to 55%. Furthermore, individuals lacking more than three basic skills expected by the accrediting body were far less likely to complete their studies. Almost all residents with no or just one small issue succeeded in graduating and being awarded a board certificate. Even so, those struggling with Essential Attributes or lack important skills are more likely to fail training or miss receiving certified. Extra studies are needed to improve how remediation is done and to customize support for those in the area less able to protect themselves.

Key words: - Resident Performance, Clinical Competency Committee, Graduation Outcomes, Board Certification, Essential Attributes.

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INTRODUCTION

Training programs in residence are responsible to both the public and their trainees to produce skilled doctors. For this reason, programs watch over residents with supervision, evaluations and tests. [1] If trainees experience difficult situations in any part of their personal, work or study lives, the program assists and guides them.

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There has been a great deal of research done on residents with performance issues. Nutritional deficiencies are reported in 6% to 26% of cases seen by experts in psychiatry, family medicine, internal medicine and general surgery.[2] Their labels include “problem residents,” “residents in difficulty,” “troublesome residents,” “problem learners,” and “residents in trouble.” We say “residents in trouble” to point out a worry for their performance and improvement, a worry that is similar to the one we have when a patient is said to be “in trouble.”

How residents who are having difficulties are studied is varied. Many studies have depended on surveys of program directors to determine the level of residents with deficiencies, identify common mistakes and explain what interventions were used. [3] At the same time such surveys can be affected by how people respond and what they remember and usually only offer details at one point in time, making it hard to observe changes. Among more than 250 internal medicine program directors surveyed in 1999, it was discovered that problem residents are common: in 94% of all training programs, some residents required addressing by an official because of their behavioral and educational issues. [4-5] Medical knowledge gaps, poor decision making in clinical situations and poor use of time were the most regularly observed concerns. When the survey was conducted in 2012, using the main abilities listed by the accrediting body as a frame, the survey found that the largest number of doctors had deficiencies in Medical Knowledge, Patient Care and Interpersonal Communication. Residents encountering problems has also been examined by following longitudinal progress at a single center within various specialties, helping to track graduation and certifications. [6-10] As an example, a ten-year study at one center discovered that of 115 surgical residents, 21% had performance problems and 75% completed their training program. The main lacks in medicine related to training, knowing what to do, issues with doctors and workplace relationships. Researchers also looked back at the records of 230 residents at one family medicine school over 25 years and discovered that 9% were having trouble due to weak medical knowledge, attitudes and dealing with others. Despite many studies on struggling residents, little is known about how performance shortfalls affect finishing training and getting certified, in particular for anesthesiology. Right now, more than 130 anesthesiology programs that are accredited provide feedback on their resident's skills to the board that gives them certificates. [11] The reason for this 10-year, multicenter study is to find out how often substandard performance occurs, study the different types of performance gaps and measure their impact on completing training and passing exams.

MATERIALS & METHODS

We carried out a multicenter study of anesthesiology residents' data after the local Institutional Review Board approved our design. Only residents who completed their anesthesia year 1 (PGY-2) from 2000 to 2009 were analyzed in this work. During the course of the study, the data we used involved: Clinical Competency Committee (CCC) reports, Residency Program Directors' memoranda and American Board of Anesthesiology Training Reports (ABA RTR/CCC Report). [12-14] The CCC is a group selected by the ABA and ACGME, made up of faculty who come together twice or four times every year to assess how residents are doing. Monitoring resident achievements and recommending to the Program Director on their readiness for graduation and independent practice is the main purpose of the CCC. The ABA RTR/CCC Report assesses residents' performance using seven main qualities (Essential Attributes) from the ABA, plus six ACGME Core Competencies and four important Clinical Skills (listed on Table 1). Director of the Institute and the CCC Chair take responsibility for the ABA reporting on the performance of residents. Each Clinical Competency Committee in every participating residency program developed and implemented certain rules and procedures for examining and promoting trainees. [15] Not fulfilling the evaluation criteria brought about CCC support. The steps were counseling, writing letters of concern, producing reports on inadequate ABA training, granting probationary status and resignation or dismissal if the problems could not be resolved. Only the ABA training reports showed similarities across the various CCC actions studied here. How probation placement was recommended differed from one institution to another which meant they were impossible to compare. Based on each resident's situation, unique strategies for remediation were planned by the programs. [16]

Study Sites

Massachusetts General Hospital, the University of California, Los Angeles (UCLA), the University of California, San Francisco and the University of Colorado School of Medicine were part of the study. For the study period, UCLA had three directors and one chair for the California Combined Program, UCSF had two directors and one chair and both Massachusetts General Hospital and the University of Colorado School of Medicine each had one director and one chair for the Combined Program. All residency programs in anesthesiology are accredited by the ACGME.

Data Collection and Outcome Measures

For the study, it included trainees from the four programs who started year 1 in clinical anesthesia training between 2000 and 2009, regardless of when they transferred into the program. Since reporting standards for interns are different from those for residents, the study evaluated only residents at PGY-2 to PGY-4 levels. Information for the 2009 cohort was gathered by reviewing performance evaluations carried out before 2012. Reports produced up through February 2016 were relied upon to ensure each promotion met the requirements for board certification. [17] All data was collected by the Program Director, CCC Chair or their representatives at each site. They looked over ABA training records, minutes from CCC meetings, emails and records for each resident. All information was made anonymous and gathered in a single unified database including: the year the resident started the program, the training site, the year when their first CCC intervention took place (if it did), their level at that point,

the type of intervention given and which ACGME Core Competencies were recognized as areas of concern. Should a resident receive one or more Unsatisfactory reports, the primary Unsatisfactory competence noted by the training program is entered into the database. I looked at whether participants completed the program (graduation) and got ABA Board Certification.

Statistical Analysis

Presenting these statistics, I used both frequency counts and percentages inside the contingency tables. Whenever we wanted to study differences in sites or associations involving types of deficiencies, treatments and results, Pearson's chi-square test or Fisher's exact test was selected. All analyses were conducted with JMP Pro 12 (provided by SAS Institute). Generalized logistic mixed-effects models were designed to look at program completion and ABA certification (both being binary outcomes). Due to differences between the sites in the descriptive analysis, a random effect for site was added to these models (see Tables 2 through 6). These models were fitted using SAS 9.4 (SAS Institute).

RESULTS

The results from the residency programs point to a high completion and board certification rate among residents of all four programs. In all, 875 individuals were included in the study, of whom 97% graduated and 95% went on to receive certification. Graduation rates ranged from 95% to 98% and board certification rates fell between 95% and 96% at all the institutions involved. Examining those residents who did not receive actions from the Clinical Competency Committee indicates almost universal success, with 650 residents reaching graduation and certification at high rates of 98% and 97% respectively. Residents who did not do well and had CCC actions performed met expectations, but significantly more so than residents who were benefited by the CCC. [18] The number of residents completing training and becoming certified dropped slightly, yet 93% were still able to graduate and 90% achieved board certification. In much the same way, the data demonstrates the results of residents getting designations of Unsatisfactory on their evaluations. Of the people not included in the groups, 99% graduated and 98% were certified, clearly confirming their achievement levels. Nonetheless, among the 113 people who received any Unsatisfactory mark, only 89% completed their training and 85% earned a certification. They prove that deficiencies in performance do hinder training success, but also show that the help and guidance available can guide students effectively. All in all, the research shows that residents who present with performance concerns graduate and pass tests less often, but the large majority still manage to finish their training and secure certificates. [19]

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Table 1: Graduation and Board Certification Rates – All Residents.

Site	Program A	Program B	Program C	Program D	Total (%)
All residents	135	230	290	220	875
Graduates (%)a	130 (96)	225 (98)	282 (97)	210 (95)	847 (97)
ABA certified (%)b	128 (95)	220 (96)	275 (95)	208 (95)	831 (95)

Table 2: Graduation and Board Certification Rates – Residents Receiving vs. Not Receiving CCC Actions

Site	Program A	Program B	Program C	Program D	Total (%)
Residents not receiving CCC actions	110	210	230	100	650
Graduates (%)a	109 (99)	208 (99)	224 (97)	98 (98)	639 (98)
ABA certified (%)b	108 (98)	206 (98)	222 (96)	97 (97)	633 (97)
Residents receiving CCC action	25	30	45	115	215
Graduates (%)a	21 (84)	28 (93)	43 (96)	108 (94)	200 (93)
ABA certified (%)b	19 (76)	27 (90)	41 (91)	106 (92)	193 (90)

Table 3: Graduation and Board Certification Rates – Residents Receiving vs. Not Receiving Unsatisfactory Designations.

Site	Program A	Program B	Program C	Program D	Total (%)
Residents not receiving Unsatisfactory designation	125	230	260	140	755
Graduates (%)a	122 (98)	230 (100)	257 (99)	139 (99)	748 (99)
ABA certified (%)b	120 (96)	228 (99)	254 (98)	138 (99)	740 (98)
Residents receiving Unsatisfactory designation	8	20	10	75	113
Graduates (%)a	7 (88)	17 (85)	8 (80)	69 (92)	101 (89)
ABA certified (%)b	6 (75)	15 (75)	7 (70)	68 (91)	96 (85)

Figure 1: Graduation and Board Certification Rates by Program.

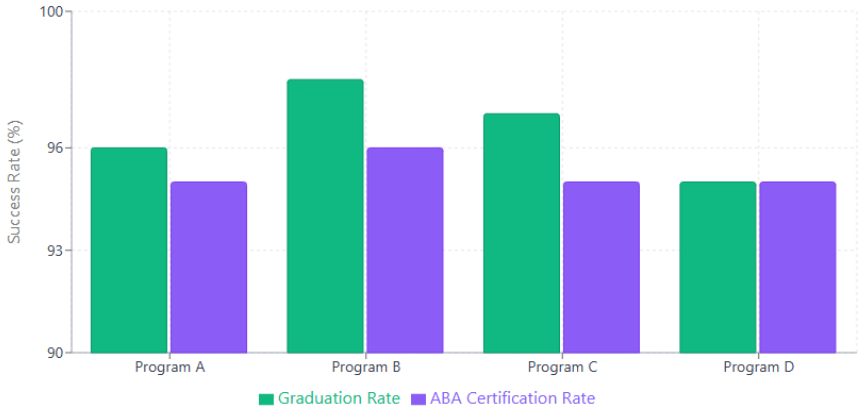


Figure 2: Impact of CCC Actions on Graduation and Certification Rates, Comparison of success rates between residents with and without CCC actions.

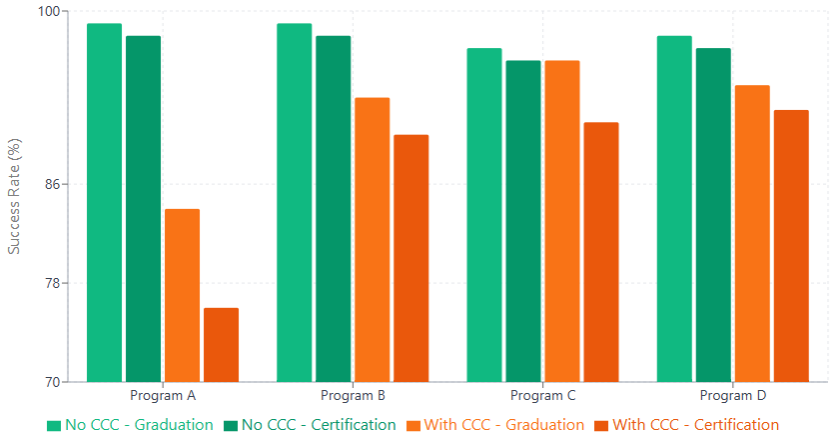
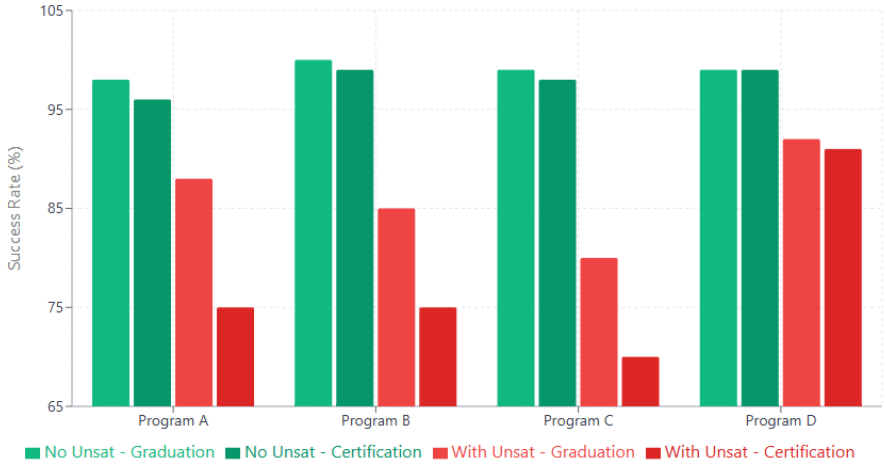


Figure 3: Impact of Unsatisfactory Designations on Success Rates, Comparison of success rates between residents with and without unsatisfactory designations



DISCUSSION

Lacking proficiency in several ACGME Core Competencies may cause a graduate to fail their board exams. When several competency areas are included among the weaknesses, the chances of finishing the course and getting certified become quite low. Around 3% of the people in the study report issues in four or more abilities. Most graduates display an acceptable level of finesse in the skills used during rehabilitation. Essential Attributes list is extremely important. Although

the group with deficiencies in these skills was small (only 1.3% of the residents), they had far lower graduation and certification rates. Any Essential Attribute that is given an Unsatisfactory rating holds the same risk to graduation as several competency deficiencies. Residents lacking Essential Attributes are less likely than average to obtain board certification. [20] It is widely accepted that these deficits are rather hard to address effectively. In the cohort, 0.5% were diagnosed with substance abuse identified through Essential Attributes. Other major studies on substance abuse have found that students in such situations are less likely to graduate or become certified, as shown in this group. All in all, most students still graduate. Even those struggling, usually still manage to graduate, as long as the concerned missing knowledge does not involve the Basic Attributes. Although difficulties that were documented resulted in a five percentage point drop in graduation rates for residents who went through CCC interventions, most finished their training successfully. [21] Even though rates of board certification are healthy, they are slightly below the CCC action graduation rates among residents (89% compared to 93%). The shortest scores were in Medical Knowledge and Patient Care, Professionalism and Communication & Interpersonal Skills were right behind. Due to a wide range of materials, students in medicine often do well because they are able to study well-established principles. Big changes were noted in the number of callbacks for CCC support and the number of poor ratings, mainly depending on institutional rules such as the automatic Unsatisfactory rating given to students in Medical Knowledge if they do not pass at Program D. [22] There was little difference in how many people graduated or were board certified by program. Solutions matched the needs of each child by using various approaches. Programs gave workers support (e.g., educational fund, leadership opportunities) and at the same time introduced negative effects (e.g., extra training, unfavorablereviews) when progress was lacking. We worked on specific areas, so students with medical knowledge issues attended lectures and read further materials, whereas those struggling with clinical skills were assigned specific clinical practices. First, faculty mentors helped with professionalism and communication problems, but when these issues repeated, the school began referring the student to behavioral therapy. Because the issues were recognized early on, efforts to address them grew as needed.

Study Limitations

A problem is that the system depends on having complete and correct data in the residency database at all locations and fortunately, consistent staff helped gather the data. Though consensus was used to assess resident records, changing detailed feedback into numbers could have made the feedback too simple. Nearly as many residents with competency deficiencies had multiple problems causing the impact of each problem to be difficult to understand. Because there were so many individuals in each cohort, it was not possible to examine interactions between their various learning challenges. There could be selection bias, since all programs in the study were at universities and don't fully represent anesthesiology training. For those with shorter follow-up periods, minimal changes were seen when we looked closer at the results. Because multiple different methods were used together in many programs, this study did not assess the separate benefits of each strategy. Although the ACGME gave general instructions on CSCC structure and tasks, every committee was guided by the policies created by their individual institution. When this study was conducted, there were no standard milestones for assessing residents.

CONCLUSION

The four communities each experienced very different rates of residents receiving intervention by the Clinical Competency Committee (CCC). Even with this changed trend, the rate of students graduating did not change, yet it reveals there is no uniform procedure at CCC institutions. The research reveals that creating rules and agricultural practices shared by all specialties would simplify comparing programs. Putting standard operating procedures in place for every CCC would keep actions the same across all locations, improve productivity, secure quality and ensure that things are transparent. It would be useful if accrediting organizations joined efforts to draft and support best practices for CCC operations. The success rates found in this study can act as examples for similar anesthesiology residency programs to follow. There was no difference in these rates when we looked at all four institutions. While students attended CCC for lacking ACGME core competencies were less likely to succeed in graduating and obtaining certification, most still completed their studies and became certified, probably due to the programs' effective remediation. On the other hand, difficulties in Basic Attributes were linked to issues in examination outcomes, suggesting that fixing these problems can be tough in anesthesiology training. A shortfall in several of the ACGME Core Competency areas heightened an individual's chances of failing training or not graduating. Currently, our results do not allow us to review specific plans for remediation, so future studies should focus on finding the most effective and efficient ways to work on specific areas of weakness.

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