CME Anesthesiologists with Substance Use Disorders: A 5-Year Outcome Study from 16 State Physician Health Programs

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BACKGROUND: Anesthesiologists have a higher rate of substance use disorders than other physicians, and their prognoses and advisability to return to anesthesiology practice after treatment remain controversial. Over the past 25 yr, physician health programs (PHPs), created under authority of state medical regulatory boards, have become primary resources for management and monitoring of physicians with substance abuse and other mental health disorders.

METHODS: We conducted a 5-yr, longitudinal, cohort study involving 904 physicians consecutively admitted to 1 of 16 state PHPs between 1995 and 2001. This report analyzed a subset of the data involving the 102 anesthesiologists among the subjects and compared them with other physicians. The main outcome measures included relapse (defined as any unauthorized addictive substance use, including alcohol), return to anesthesiology practice, disciplinary actions, physician death, and patient harm.

RESULTS: Anesthesiologists were significantly less likely to enroll in a PHP because of alcohol abuse (odds ratio [OR] 0.4 [confidence interval {CI}: 0.2–0.6], $P < 0.001$) and much more likely to enroll because of opioid abuse (OR 2.8 [CI: 1.7–4.4], $P < 0.001$). Anesthesiologists had a higher rate of IV drug use, 41% vs 10% (OR 6.3 [CI: 3.8–10.7], $P < 0.001$). During similar periods of monitoring, anesthesiologists received more drug tests, 101 vs 82 (mean difference = 19 [CI: 3–35], $P = 0.02$); however, anesthesiologists were less likely to fail at least one drug test during monitoring, 11% vs 23% (OR 0.4 [CI: 0.2–0.9], $P = 0.02$). There was no statistical difference among rates of program completion, disciplinary actions, return to practice, or deaths, and there was no report of significant patient harm from relapse in any record.

CONCLUSIONS: Anesthesiologists in our sample treated and monitored for substance disorders under supervision of PHPs had excellent outcomes similar to other physicians, with no higher mortality, relapse rate, or disciplinary rate and no evidence in their records of patient harm. It is postulated that differences of study design account for contradictory conclusions from other reports.

(Anesth Analg 2009;109:891–6)

Among physicians, anesthesiologists have an unusually high incidence of substance use disorders. For example, a survey of 260 anesthesiologists from the Medical College of Wisconsin graduating between 1958 and 1988 reported that 32% used drugs to "get high" and 15.8% had been drug dependent.[1] Physician health programs (PHPs) are specialized programs granted authority in most states by regulatory boards to manage and monitor physicians after treatment for substance use disorders and other problems.[2] Anesthesiologists are consistently overrepresented (approximately 2.5 times the rate of the average physician) in reports from these programs[3,4] and similarly over-represented in substance abuse treatment centers that specialize in treatment of physicians.[5] Underwriters have identified such high rates of substance abuse among anesthesiologists that some disability insurance companies no longer insure anesthesiologists.[6]

Most physicians managed and monitored by PHPs have reported 75%–90% success rates 5 or more years after treatment for substance use disorders;[7,8] however, there is controversy regarding anesthesiologists' prognoses, especially concerning risk of returning to anesthesiology practice.[9] A recent editorial suggested that substance-abusing anesthesiologists should not be permitted to return to anesthesiology practice after treatment for substance use disorders even with strict monitoring.[10] This attitude springs in part from a survey by Menk et al.,[9] which reported poor outcomes

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Supported by the Robert Woods Johnson Foundation.

All authors participated in study design, implementation, and writing and editing the article. Skipper had full access to all of the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis. Skipper and DuPont were paid as Co-Principal Investigators and Campbell was paid by the Institute for Behavior and Health to assist in study design, statistical analysis, and review. Skipper is the medical director of the Alabama Physician Health Program. Neither DuPont nor Campbell have any affiliation with Physician treatment or Physician Health Programs. A. Thomas McLellon, PhD, was the recipient of the grant and contributed significantly to development and implementation of the larger study. A steering committee of the Federation of State Physician Health Programs oversaw the larger study design, implementation, and interpretation and reviewed this article for comment.

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DOI: 10.1213/ane.0b013e3181adc39d

for substance-abusing anesthesiology residents: only a 34% successful reentry for those using parenteral opioids and 26 deaths (14% of the 180 reported cases), half attributed to drug relapse. A similarly designed but more recent survey of anesthesiology training program directors regarding substance-abusing residents between 1991 and 2001 reported comparably poor findings, noting a lower but still significant death rate (9%).[11] In contrast are studies from PHPs reporting good outcomes for anesthesiologists, comparable with other physicians, with low risk of suicide and low risk of patient harm.[2,3,12]

This study is the first long-term outcome report based on actual data from records of anesthesiologists from a cross-section of 16 state monitoring programs reviewed 5 or more years after treatment for substance use disorders.

METHODS

Design

The study used the dataset from a 5-yr, longitudinal, cohort study reported previously, involving 904 physicians with diagnoses of substance abuse or dependence consecutively admitted to 1 of 16 state PHPs between 1995 and 2001.[13] The characteristics and outcomes of a subset of 83 anesthesiologists were compared with those of nonanesthesiologists. We restricted the comparisons with objective data from official records (for example, treatment services, attendance, sanctions by the program, reports to licensing boards) and from laboratory records (urine tests and other specimens). To protect the confidentiality of the physicians, members of each program's medical records department collected the data. Data were collected between November 2006 and January 2007 under training, supervision, and monitoring by the authors. All components of this study were reviewed and approved by the IRB of the Treatment Research Institute.

Participant Sample

Of the 904 participants in the original study, 42 (4.6%) were residents, all of whom were excluded from this study because they constituted a population of physicians who were both younger than the average practicing physician and therefore at higher risk of substance abuse; although there were no significant differences between residents and practicing physicians (including anesthesiology residents) on any outcome variables measured, their numbers were deemed too small to be conclusive. Residents excluded from the study included 6 in anesthesiology training programs and 36 in other specialties.

Of the remaining 862 participants, 96 (11.1%) were anesthesiologists. At the time these participants enrolled in PHPs, anesthesiologists comprised 4.1% of the approximately 749,000 physicians (excluding residents) providing patient care in the United States.[14] The overrepresentation of anesthesiologists in the participant sample (odds ratio [OR] 2.9 [confidence interval {CI}: 2.4–3.6], $P < 0.001$) is consistent with findings from previous studies of physician enrollment in substance abuse treatment programs.[5]

Lost to Follow-Up

During the study period, 82 of the 862 participants (9.5%) moved out of their state program's jurisdiction. We had no access to any continuing records for those participants and so they were not included in the analyses for this study. Those lost to follow-up included 13 anesthesiologists and 69 nonanesthesiologists.* We therefore performed analyses comparing 83 anesthesiologists with 697 nonanesthesiologists for whom 5 yr of follow-up data were available.

Statistical Analysis

SPSS for Windows version 15 was used for the analyses. Demographic and outcome variables for anesthesiologists and nonanesthesiologists were analyzed using χ^2 and t-test statistics for comparisons of proportions and means, respectively. Univariate (unadjusted) ORs with 95% CIs were computed to compare the two physician groups on selected binomial characteristics and outcomes. In addition, binary logistic regression analysis was used to produce adjusted multivariate ORs for the two groups on the same variables, controlling for the effects of year of enrollment and program location. Because the CIs for the adjusted and unadjusted ORs were essentially unchanged, it was concluded that there was effective homogeneity by time and location. Therefore, the ORs presented in the Results section are the unadjusted univariate ORs, and the P values are by Fisher's exact test. The adjusted multivariate ORs and P values are provided in Table 3.

RESULTS

The study was based on treatment records from 16 programs that had previously participated in a survey of 42 PHPs conducted by the authors. That original study described the structure, function, funding, and overall characteristics of the PHPs as well as the intervention, evaluation, referral for treatment, and monitoring activities after the treatment was provided. The 26 PHPs that did not participate in record review were contacted, and all claimed lack of resources and/or regulatory impediments as the reason for declining to participate. The programs that did and did not participate in the follow-up study were not

*Comparisons between those lost to follow-up and those retained in the study revealed no significant differences between groups on gender, age, primary substance of abuse at admission, history of prior treatment, or treatment participation status (mandatory versus voluntary). Among those lost to follow-up, there were no significant differences between anesthesiologists and nonanesthesiologists on these same variables. Over half of the anesthesiologists (54%) and the nonanesthesiologists (68%) who could not be followed for 5 yr had transferred in good standing to PHPs in other states.

Table 1. Characteristics of Anesthesiologists and Other Physicians Participating in State Physician Health Programs for Substance Use Disorders[a]

Characteristic	Anesthesiologists (n = 83)	Other physicians (n = 697)	P*
Age at enrollment			
Mean ± SD	42 ± 6	45 ± 9	<0.01
Range	26–60	27–75	
Gender			
Male	71 (86)	599 (86)	0.87
Female	12 (14)	95 (14)	
Enrollment status			
Mandatory	49 (59)	393 (57)	0.73
Voluntary	34 (41)	303 (43)	
History of treatment			
Yes	25 (30)	273 (39)	0.12
No	58 (70)	422 (61)	
Type of agreement			
Dependence (5 yr)	76 (92)	611 (88)	0.37
Diagnosis/abuse	7 (8)	86 (12)	
Primary drug of abuse			
Alcohol	23 (28)	361 (52)	
Opioids	46 (55)	217 (32)	
Stimulants	7 (8)	50 (7)	<0.01
Sedatives	2 (2)	25 (4)	
Other	5 (6)	36 (5)	
IV drug use history			
Yes	32 (41)	64 (10)	<0.001
No	46 (59)	584 (90)	
Number of substances			
Single	43 (52)	339 (49)	0.63
Multiple	40 (48)	358 (51)	
Months in testing period			
Mean ± SD	49 ± 22	47 ± 26	0.50
Range	2–82	0–155	
Number of tests			
Mean ± SD	101 ± 72	82 ± 68	0.02
Range	2–384	1–435	

[a] Values are number (percentage) unless otherwise indicated.

* From t-test for independent means or χ^2 test for comparison of proportions (two-tailed) as appropriate.

statistically or clinically significantly different for evaluation, referral, treatment, supervision, support, and monitoring practices. The 16 participating programs tended to be large: 31% were in the largest quarter of programs. The mean number of physicians in each program was 56 (range, 11–119). Although these 16 programs may not be considered nationally representative, they showed no obvious clinical, administrative, or organizational differences from those not participating.

The 780 participants in this study (83 anesthesiologists and 697 other physicians) were distributed among the 16 programs so that, on average, there were 5 anesthesiologists (range, 1–12) and 44 nonanesthesiologists (range, 6–95) per PHP. Anesthesiologists did not constitute more than 17% of the participants in any of the 16 programs.

Descriptive characteristics of anesthesiologists and nonanesthesiologists are presented in Table 1. On average, program enrollees were in their forties with males comprising 86% of each group. The majority of physicians in both groups, approximately 58%, were mandated to participate in the program. According to intake records, 30% of anesthesiologists and 39% of the other physicians had a history of treatment for substance use when they enrolled in the program. In each group, about 90% of enrollees signed a 5-yr dependence agreement, indicating that a diagnosis of substance dependence had been made and the physician agreed to be monitored for at least 5 yr. The others signed a diagnostic monitoring agreement, which is a more limited and shorter-duration agreement used when a diagnosis of substance dependence was not made.

The two groups differed regarding the primary substance of abuse as recorded in their intake records: the majority of nonanesthesiologists (52%) were enrolled because of alcohol-related problems, whereas for most anesthesiologists (55%) the primary drug of abuse was an opioid. Thus, anesthesiologists were significantly less likely than their peers to enroll in a PHP because of alcohol abuse (OR 0.4 [CI: 0.2–0.6], $P < 0.001$) and much more likely to enroll because of abuse of opioids (OR 2.8 [CI: 1.7–4.4], $P < 0.001$). Another significant difference between the groups was that 41% of the anesthesiologists had a history of IV drug use compared with 10% of the nonanesthesiologists (OR 6.3 [CI: 3.8–10.7], $P < 0.001$).

Table 2. Drug Testing Outcomes and Program and Occupational Status of Anesthesiologists and Other Physicians at 5-yr or More Follow-Up from Signing a Monitoring Contract with a State Physician Health Program for Substance Use Disorders[a]

Outcome	Anesthesiologists (n = 83)	Other physicians (n = 697)	P*
Positive drug test			
Yes	9 (11)	156 (23)	0.02
No	74 (89)	534 (77)	
Reported to board			
Yes	15 (18)	140 (20)	0.77
No	68 (82)	556 (80)	
Program status			
Completed contract	59 (71)	445 (64)	0.09
Contract extended	15 (18)	112 (16)	
Failed to complete	9 (11)	140 (20)	
Occupational status			
Licensed or practicing medicine	63 (76)	508 (73)	0.21
Licensed or working (not clinical)	1 (1)	38 (6)	
Retired or left practice voluntarily	4 (5)	27 (4)	
License revoked	6 (7)	78 (11)	
Died	5 (6)	24 (3)	
Unknown	4 (5)	22 (3)	

[a] Values are number (percentage).

* From χ^2 test for comparison of proportions (two-tailed).

Random drug testing was required of the physicians participating in the programs. Data presented in Table 1 show that both the anesthesiologists and the other physicians were subject to testing for an average period of about 48 mo. During this time, the mean number of tests (101) administered to anesthesiologists was higher than the number (82) administered to nonanesthesiologists; however, because the CI for the mean difference between the groups was large (mean difference = 19 [CI: 3–35], P = 0.02), it cannot be concluded that anesthesiologists were routinely tested more frequently than other physicians.

Table 2 compares anesthesiologists and nonanesthesiologists on primary outcome measures examined in this study: positive drug tests during monitoring, physicians reported to the licensing board, program status at 5-yr follow-up, occupational status at follow-up, and deaths. The PHP records, which chronicled each instance in which a program participant tested positive for drugs, revealed that 11% of anesthesiologists had at least one positive test compared with 23% of nonanesthesiologists. Although this difference was statistically significant, examination of the OR indicated a wide CI with the upper bound approaching 1 (OR 0.4 [CI: 0.2–0.9], P = 0.02). Therefore, we cannot report with confidence that anesthesiologists were less likely than other physicians to test positive for drugs. Approximately 20% of the participants in both groups were reported to their state licensing agencies because of noncompliance with the terms of the PHP agreement or relapse.

At the end of the 5-yr follow-up period, 71% of anesthesiologists and 64% of nonanesthesiologists had completed their contracts and were no longer required to be monitored (OR 1.4 [CI: 0.9–2.3], P = 0.23). Another 18% of anesthesiologists and 16% of nonanesthesiologists had their contracts extended beyond the initial monitoring period (OR 1.2 [CI: 0.6–2.1], P = 0.64). The reasons for continued monitoring included relapse, failure to comply with requirements, such as group attendance or therapy, or, in some cases, voluntary continuance to help prevent relapse and/or demonstrate continued recovery to others. Although a larger proportion of nonanesthesiologists (20%) failed to complete the program than anesthesiologists (9%), the odds of failing to complete were not significantly smaller for anesthesiologists (OR 0.5 [CI: 0.2–1.0], P = 0.05). These results indicate that anesthesiologists were no more likely than other physicians to complete the program, to fail to complete, or to extend the monitoring period beyond the original 5 yr specified in their agreements.

The final outcome examined was participants' occupational status at follow-up. As shown in Table 2, there were no overall differences between the two groups in the distribution of participants among the various occupational status categories used in the study. A primary category of interest was the extent to which physicians who had participated in the programs were licensed and practicing medicine at the 5-yr follow-up. The study found that the proportion of anesthesiologists (76%) continuing their medical practice was not significantly different than that for nonanesthesiologists (73%) (OR 1.2 [CI: 0.7–2.0], P = 0.60). Additionally, there were no statistically significant differences between anesthesiologists and nonanesthesiologists in regard to the percentage who had their licenses revoked or the percentage reported to have died (Table 3).

The record review sought evidence of any patient harm associated with relapse. None was detected in this cohort of anesthesiologists.

DISCUSSION

As in other studies, anesthesiologists were significantly overrepresented, further documenting a reported higher rate of substance abuse of 2–2.7 times

Table 3. Selected Characteristics and Outcomes of Anesthesiologists and Other Physicians in State Physician Health Programs for Substance Use Disorders, with Adjusted and Unadjusted Odds Ratios[a]

Characteristic/outcome	Anesthesiologists ($n = 83$)	Other physicians ($n = 697$)	Unadjusted univariate odds ratios		Adjusted multivariate odds ratios*	
			OR (95% CI)	*P*	OR (95% CI)	*P*
Gender						
Male	71 (86)	599 (86)	1.1 (0.6–2.0)	0.87	1.1 (0.5–2.0)	0.88
Primary drug of abuse						
Alcohol	23 (28)	361 (52)	0.4 (0.2–0.6)	<0.001	0.4 (0.2–0.6)	<0.001
Opioids	46 (55)	217 (32)	2.8 (1.7–4.4)	<0.001	2.9 (1.8–4.6)	<0.001
IV drug use history						
Yes	32 (41)	64 (10)	6.3 (3.8–10.7)	<0.001	5.7 (3.4–9.8)	<0.001
Number of substances						
Multiple	40 (48)	358 (51)	0.9 (0.6–1.4)	0.63	0.9 (0.6–1.4)	0.61
Prior treatment						
Yes	25 (30)	273 (39)	0.7 (0.4–1.1)	0.12	0.7 (0.4–1.1)	0.15
Enrollment status						
Mandatory	49 (59)	393 (57)	1.1 (0.7–1.8)	0.73	1.2 (0.8–2.0)	0.76
Positive drug test						
Yes	9 (11)	156 (23)	0.4 (0.2–0.9)	0.02	0.4 (0.2–0.8)	0.01
Reported to board						
Yes	15 (18)	140 (20)	0.9 (0.5–1.6)	0.77	0.8 (0.5–1.5)	0.72
Program status						
Completed contract	59 (71)	445 (64)	1.4 (0.9–2.3)	0.23	1.5 (0.9–2.5)	0.17
Contract extended	15 (18)	112 (16)	1.2 (0.6–2.1)	0.64	1.1 (0.6–2.1)	0.69
Failed to complete	9 (11)	140 (20)	0.5 (0.2–1.0)	0.05	0.5 (0.2–0.9)	0.05
Occupational status						
Licensed or practicing medicine	63 (76)	508 (73)	1.2 (0.7–2.0)	0.60	1.2 (0.7–2.1)	0.57
License revoked	6 (7)	78 (11)	0.6 (0.3–1.5)	0.35	0.6 (0.2–1.4)	0.28
Died	5 (6)	24 (3)	1.8 (0.7–4.8)	0.22	1.7 (0.6–4.7)	0.30

OR = odds ratio; CI = confidence interval.

[a] Values are number (percentage); all odds ratios are anesthesiologists/other physicians.

* Adjusted for year of enrollment and program location; Wald test *P* values for year and location were not significant at $P < 0.05$.

compared with other physicians. This finding has been consistent throughout all reports.

Exploring the contradictory reports regarding prognosis for substance-abusing anesthesiologists, earlier studies were essentially of two designs: survey studies of training program directors versus longitudinal studies of anesthesiologists in monitoring by individual state PHPs. The survey studies,[9,11] which reported much poorer outcomes, surveyed training program directors regarding the number of residents encountered with substance disorders over the preceding 10 yr and their outcomes. Considering the tendency for confidential handling of this type of information, the data from these reports were likely skewed toward poor outcomes, such as relapse or death, which would less likely remain confidential and more likely to be remembered. It was also noted in one of the survey studies that many of the training program directors' tenure was less than the 10-yr study period for which they were being asked to recall cases.

The reported numbers themselves from these survey studies suggest that reports were not complete. For example, 31 of 230 physicians in the Collins et al. survey were "currently in active treatment" leading to their finding of a 0.89% point prevalence of active addiction. Because drug treatment seldom lasts more than 4 mo, it is reasonable to expect, from the cohort of more than 100 training programs, that approximately 93 residents per year, or 930 per 10 yr, would be treated. Because only 230 cases were identified, this represents only approximately 25% of the total expected cases. In the Menk et al. survey of the 159 anesthesia training programs in the United States, 113 responded reporting 180 cases, an average of 1.6 case reports per responding program for a 10-yr period, clearly a smaller number than would be expected, again suggesting under-reporting.

Our data demonstrating similar or better outcomes (survival, total abstinence, completion of monitoring, return to work in profession, and retention of medical license) for anesthesiologists compared with other specialties are consistent with other outcome studies from single PHP.[3,4,12] Anesthesiologists received similar treatment as other physicians under PHP care; however, their monitoring often had the following added features. 1) Witnessed naltrexone administration. 2) Regular periodic hair testing, which is more effective than urine testing because fentanyl and similar compounds are extremely short lived and are very difficult to detect (a fact well known to anesthesiologists). It is also more difficult to cheat on a hair test, adding to its value testing in a high-risk population.

Periodic hair testing may more effectively discourage drug use because those being monitored with hair tests know that any drug use will more likely be detected. 3) Enhanced security measures in and around the operating room to prevent diversion. (Being careful with drug access and disposal by using witnesses, automated distribution devices, and monitoring cameras, and spectrometric scanning of discard wastage.)

The earlier more pessimistic studies regarding the ability of anesthesiologists to remain drug-free did not note which, if any, subjects were in active PHP monitoring. Our study, in contrast, was limited to the experiences of physicians in active PHP care management, which included active monitoring using more sophisticated means of detecting any return to alcohol or other drug use and high quality addiction treatment, factors that possibly account for better outcomes. Additionally, the articles of Menk and Collins involved anesthesiology residents exclusively, whereas our study excluded residents.

We found no evidence indicating patient harm had occurred associated with any relapse. Although the value of this finding may be limited because data were restricted to a review of anesthesiologist's records, it is consistent with the Domino et al. study, which found no evidence of patient harm among 33 anesthesiologists over 10 yr in Washington state.[12] Sivarajan et al.[15] examined data from the American Society of Anesthesiology malpractice database seeking evidence of patient harm from substance abuse. Of the 2715 closed anesthesia claims, in only 7 was substance abuse or chemical dependence noted by the anesthesiology reviewer in the claim summary. Two of the seven cases involved nurse anesthetists who were abusing substances under the supervision of anesthesiologists. Three of the five claims in which a substance-abusing anesthesiologist delivered anesthesia care involved serious patient harm (brain damage or death) because of lack of vigilance or judgment during anesthesia. Two of these three claims involved anesthesiologists who were alcoholics and the third involved an anesthesiologist who left the care of the patient to smoke a cigarette. The two alcoholic anesthesiologists had been unavailable to provide care: one because of alcohol intoxication and the other who left to attend rehabilitation without providing backup care for a chronic pain patient. In summary, of 2715 malpractice claims against anesthesiologists 5 involved substance-abusing anesthesiologists, 4 of whom were alcoholics and the other a smoker. No closed claims involving drug-addicted anesthesiologists were noted. This indicates a remarkably low rate of patient harm from substance-abusing anesthesiologists. The special stigma directed toward opiate-addicted anesthesiologists, especially those using IV opiates, does not appear to be warranted.

CONCLUSION

This study supports the finding that anesthesiologists have a significantly higher rate of substance abuse by a factor of 2.7–1 when compared with other physicians. Programs to prevent and/or detect substance use in this relatively high-risk group would therefore seem especially justified but have been almost nonexistent.[16]

Although any incidence of overdose death or suicide is unacceptable, the rates of these phenomena were small and not higher among anesthesiologists compared with other physicians. There is now considerable evidence, corroborated by this study, that anesthesiologists managed by PHPs have good prognoses.

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