Leadership of United States Academic Anesthesiology Programs 2006: Chairperson Characteristics and Accomplishments

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BACKGROUND/METHODS: We conducted an Internet-based survey of all current academic anesthesiology chairpersons to benchmark their characteristics and accomplishments, as well as to gain insights that might be useful to aspirant department chairs.

RESULTS: The response rate was 55%; chairs were predominantly male (92%), with a mean age of 55 yr and an average time in post of 6.5 yr. They were American medical graduates (82%), had undergone a research (31%) or a clinical fellowship (57%), were full professors (86%) and practiced most commonly as generalists and in intensive care. Chairs had a significant record of scholarship, including a median of 30 peer-reviewed papers, and an average of 11.0 industry and 2.7 federal grants. Thirty-two percent served as editors of peer-reviewed journals and 42% have served as president/chairman of national committees. Fully 30% of current chairs had previous experience as a chair. Sixty-eight percent of current chairs decided early in their career (at the resident/fellow or assistant professor level) that they wished to be a chair. In advising aspirant chairs, the most helpful experience to being a chair was that of having served as a vice chair, and the highest rated advice was to become a division director. Chairs were predominantly satisfied with their position (median 3 of 10) and 44% would return to clinical anesthesiology after chairmanship.

CONCLUSIONS: The survey suggests that anesthesiology chairs value peer-reviewed research, scholarship, and academic achievement, but do not believe that significant research experience is of great benefit to functioning as a chair.

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Academic anesthesiology is under threat on many fronts (1–4) and the question has been raised, “How many anesthesiology programs touted to be ‘academic’ are there that do not have a physician scientist or even a well-published academician in a major position of leadership within the department?” (3); there has never been a published survey on the characteristics, backgrounds, or accomplishments of the chairpersons of academic anesthesiology departments. We report on an Internet-based survey conducted to benchmark these data for the current chairpersons of the 132 academic anesthesiology departments in the United States, as well as to gain insights that might be useful to aspirant chairs of anesthesiology.

METHODS

The survey received exempt status from the Pennsylvania State College of Medicine IRB and consisted of two sections: 1) Chair characteristics, qualifications, and career development; and 2) Leadership or management concepts. The questions reported on are provided in the Appendix (please see Appendix available at www.anesthesia-analgesia.org). A draft survey was distributed to three focus group participants to obtain feedback before distribution (e.g., questionnaire layout, ease of use, question validity). An introductory letter about the survey, including the website Uniform Reference Locator and access information, was distributed via email to the Listserv participants for the Society of Academic Anesthesiology Chairs (SAAC). Three follow-up emails were also sent to the same group as a reminder over the course of a 4-wk survey period. The survey was made available via the Internet (protected by a username and password to restrict accessibility) and resided on a network server of the Pennsylvania State University College of Medicine, Pennsylvania.

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were obtained (e.g., name, date of birth, social security number, address, institution). At the time the survey was conducted (July/August 2006), the SAAC listserv consisted of 132 anesthesiology chairpersons. As all questions were voluntary; not all questions were completed by each respondent, hence observations are based on a question-by-question basis rather than on the respondent survey population as a whole. The number of responses were identified by “n” for the particular question at hand.

In addition, to address whether chair respondents to this survey were different from nonrespondents, an attempt to find independent data was made. Chair gender, permanent versus interim status, and Association of University Anesthesiologists (AUA) membership as well as professorial rank could be determined from SAAC databases whereas program directors status was determined from Accreditation Council of Graduate Medical Education databases. These data were compared with survey data using a Fisher’s exact test (5).

Results are presented as median and (range) as well as the mean (x) and standard deviation (sd) and, where appropriate, the mode. In two survey question sets, respondents were asked to rank responses to questions in order of importance (1 = most important). These data were presented as the rank ordered median value, determined using Friedman’s test for significance (Fig. 6) where rank values could be chosen for each question answered (6). Where a ranked response could only be chosen once, the percentage of respondents ranking the characteristic as most important is presented (Fig. 4). When a direct comparison was made between groups, an unpaired t-test was used, assuming unequal variances. P < 0.05 was regarded as significant throughout.

**RESULTS**

Eighty survey responses were received. Of these responses, five were duplicate entries and one was a triplicate entry; thus, 73 respondents with an overall response rate of 55% was achieved.

**Chair Characteristics**

Chairpersons heading academic anesthesiology departments in 2006 had a median age of 54 yr (Table 1) were predominantly male (92%) held permanent positions (97%), and had been in the position for at least 5 yr. Eighty-six percent were full professors, 11% associate professors, and 3% assistant professors, whereas 64% were tenured and 54% elected members of the AUA.

With respect to their primary clinical subspecialty involvement, chairs most commonly were generalists or cardiothoracic anesthesiologists (Fig. 1) and then intensivists or neuroanesthesiologists.

**Training and Previous Positions Held**

Chairpersons were predominantly American medical graduates (82%) and held the MD degree (93%), whereas 18% also had achieved a PhD and 24% a Master’s degree (Table 2). Not surprisingly, most completed their residencies in the United States with 7 (10%) of the current chairs having completed this at the Massachusetts General Hospital. Thirty-one percent completed a research fellowship and 57% a clinical fellowship, the most common being intensive care and cardiac anesthesiology (Table 2).

Of the multiple previous positions that a chair might have held, being a vice chair (29%) or a division director (28%) was sited most commonly (Fig. 2). It is to be noted that 15% had been interim chairs before becoming the permanent chair in the same department, (and one chair had been an interim chair in a different department) (Fig. 2), whereas 15% had gained experience as previous chairs in different departments (Table 1); hence, given that 97% of respondents were permanent chairs (Table 1), close to 30% of current permanent chairs had previous experience as chairs.

**Academic Accomplishments: Scholarship or Publication or Grant funding**

Peer-reviewed research papers predominated as evidence of scholarly productivity of current chairs,

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**Table 1. Chairperson Characteristics**

<table>
<thead>
<tr>
<th></th>
<th>Survey data</th>
<th>Independent data</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Median</td>
<td>Mean</td>
</tr>
<tr>
<td>Current age</td>
<td>54 (44–71)</td>
<td>55 (6)</td>
</tr>
<tr>
<td>Age became Chair</td>
<td>48 (32–64)</td>
<td>47 (6)</td>
</tr>
<tr>
<td>Years in current position</td>
<td>5 (1–30)</td>
<td>6.5 (7)</td>
</tr>
<tr>
<td>Permanent Chair</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interim Chair</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male Chair</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AUA Member</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Program Director is not Chair</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Professor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tenured</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

AUA = Elected member of Association of University Anesthesiologists; SAAC/AAPD = Society of Academic Anesthesiology Chairs/Association of Anesthesiology Program Directors.

* 15% of chairs have held previous positions as a Chair (n = 71); 8 had 1 previous Chair position; 2 had 2 previous Chair positions; 1 had 3 previous Chair positions.

Independent Data: a Data provided from SAAC/AAPD Database; b Data provided from ACGME.

P = P value for comparison between survey data and independent data using Fisher’s exact test.
with a mean of 66 (64) of total peer-reviewed publications (Table 3). This was not significantly different from the mean citations of 50 (50) from PubMed for all chairs listed in the SAAC database.

Thirty-two percent of chairs have served as editors, 19% as associate editors, and 84% as reviewers of peer-reviewed publications (Table 4).

Although chairs, on average, have held significantly more industry-funded grants than federal funded grants (11.0 vs 2.7), total dollar funding achieved was significantly greater from federal funding ($2.35 m vs 0.92 m) (Table 5).

Eighty-six percent of chairs judged that their academic productivity had decreased during their chairmanship.

**Committee Leadership**

Not surprisingly, recognizing their leadership role as chairpersons, 38% of current chairs have served as presidents or chairman of local, 42% of national, and 18% of international committees (Table 6).

**Motivation and Insights**

Chairs often decided early in their career to seek a chairmanship as a career goal; equal percentages (32%) made that decision as a resident or fellow, or as an assistant professor or as an associate professor, whereas only 4% did so when already a full professor (Fig. 3). Forty-five percent of chairs ranked highest, as a motivation for wishing to be a chair; “Build an academic department” whereas 23% ranked “wanted to run things” as most important (Fig. 4). “Other” reasons offered by surveyed chairs were “Altruistic reasons—I believed I could help faculty members achieve their disparate goals as a mentor,” “Drafted by dean/loyalty to program,” and “someone was needed that the faculty supported and who knew the issues.”

Twenty-four percent of chairpersons identified being a vice chair as the single most helpful experience for being a chair, while 18% felt that being an operating room (OR) director was important. Only 6% thought a research career was important while 13% of chairs thought an “MBA or other business training” was helpful; all of the latter respondents had Master’s degrees in business or health administration (Fig. 5). It is interesting to note that only 4% thought the experience of having been a residency director was helpful in conducting the work of a chair, as 11% had served as a residency program director (Fig. 2).

When asked what course of action current chairs would advise aspirant chairs to pursue (Fig. 6), chairs ranked highest pursuing a position as division director with responsibilities for research and administration and next pursuing the goal of becoming a “double threat.” Ranked lowest were “establish a research center with the goal of National Institute of Health (NIH) funding,” “Becoming a program director who publishes on education” and “complete an MBA degree.”

![Figure 1. Primary specialties of chairpersons of anesthesiology, \( n = 72 \).](image-url)
Satisfaction and Career Plans

Chairs were asked how satisfied they were with their current chair position. Figure 7 demonstrates that chairs were well satisfied with their career choice. After their current chairmanship, the most common career plan indicated was to go back to practicing clinical anesthesia, full- or part-time (42%), whereas 14% would seek another position with the hospital or university administration (Fig. 8).

Table 3. Chairperson Publications

<table>
<thead>
<tr>
<th>Type of Publication</th>
<th>Median (range)</th>
<th>Mean (sd)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research Papers</td>
<td>30 (0–327)</td>
<td>51 (56)</td>
</tr>
<tr>
<td>Review Papers</td>
<td>2 (0–30)</td>
<td>6 (8)</td>
</tr>
<tr>
<td>Case Reports</td>
<td>4 (0–20)</td>
<td>5 (5)</td>
</tr>
<tr>
<td>Editorials</td>
<td>2 (0–51)</td>
<td>4 (7)</td>
</tr>
<tr>
<td>Book Chapters</td>
<td>10 (0–90)</td>
<td>15 (16)</td>
</tr>
<tr>
<td>Edited Books</td>
<td>0 (0–8)</td>
<td>1 (2)</td>
</tr>
<tr>
<td>Total Peer-Reviewed Publications(a) (survey)</td>
<td>51 (2–355)</td>
<td>66 (64)</td>
</tr>
<tr>
<td>Total PubMed Citations(b) (independent data)</td>
<td>50 (1–314)</td>
<td>50 (50)</td>
</tr>
</tbody>
</table>

\(n = 63; \text{sd} = \text{standard deviation.}\)

86% of Chairs judged that academic productivity decreased during their chairpersonship, \(n = 64\).

Chairs were divided into low (under 25th percentile) and high (over 25th percentile) productivity groups with respect to total publications. Significantly more in the high productivity groups had tenure (\(P = 0.001\)) and AUA elective membership (\(P = 0.001\)) (\(x^2\) test).

\(a\) Total Peer Review Publications (survey) includes research papers, review papers, case reports, and editorials shown above.

\(b\) Comparison of survey with independent data, \(P = 0.06\).

\(c\) Total PubMed Citations (independent data) was determined from citations in PubMed using the Chairpersons listed in the SAAC database, \(n = 125\).

Table 4. Chairperson Involvement in Peer-Reviewed Publications

<table>
<thead>
<tr>
<th>Role</th>
<th>Percent</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Editor</td>
<td>32</td>
<td>22</td>
</tr>
<tr>
<td>Associate Editor</td>
<td>19</td>
<td>13</td>
</tr>
<tr>
<td>Reviewer</td>
<td>84</td>
<td>58</td>
</tr>
</tbody>
</table>

\(n = 69\).

DISCUSSION

This survey was conducted to establish a benchmark of the characteristics and academic accomplishments of current chairs of anesthesiology as well as to seek insights from chairs that might be useful to aspirant chairs when planning their career steps. The latter is particularly important, as the survey has demonstrated that fully 64% of the respondent chairpersons of anesthesia in the United States established that they wished to become chairs, either at the resident or fellow or assistant professor level, and then, presumably, planned their careers to achieve this goal.

There is no survey to enable direct comparison with the current survey; however, Shuck (7) has documented the mean age at which surgical chairs started their positions (49 yr in 2001 and 44 yr in 1981), which is similar to the mean age (47 yr) (Table 1) that current anesthesia chairs started. He also noted that the mean “time in grade” for these 2 years for surgical chairs was 9.4 and 7.1 yr, respectively, compared with 6.5 years for current anesthesia chairs.

This survey was further motivated by the somewhat provocative statement, quoted in the introduction, questioning the academic credentials of the leadership of academic anesthesia departments in the United States (3). The background to this statement rests with the continued concern about the need for role models as well as the status and development of physician scientists in academic anesthesia departments, as measured by the ability to achieve NIH support when compared with other specialties (1). This has resulted in proposals for extending residency training incorporating research (3) or, alternatively, mandating research-oriented clinical fellowships as a means of addressing the development of academic anesthesiologists (1). A recently performed root cause analysis suggests that the causes for lack of “Anesthesiology research performance” rests with insufficient career researchers and faculty who do research as well as the fact that
residents are not mandated to do research as part of their training in anesthesiology departments (4).

This article demonstrates that chairs of anesthesiology have significant academic accomplishments. However, a recent report generated through interrogation of PubMed and NIH databases, for chairs of anesthesiology and surgery, over a similar time period, documented that the PubMed citation rate (50 ± 51 vs 133 ± 98) and NIH grant funding rate (30% vs 60%) for anesthesiology chairs, with respect to surgery chairs, was significantly less over the duration of their career (8).

There are no further data in the literature that allow a comparative assessment of the relative strengths (or otherwise) of these accomplishments with respect to anesthesiology chairs in the past, or chairs of other comparable medical specialties, such as surgery, at any time.

When addressing the medical training of chairs (Table 2) and their insights into the importance of various experiences in preparation for becoming a chair, it is interesting to note that there are currently no doctors of osteopathy who are chairs. Further, 18% and 24%, respectively, had either a PhD or a Master’s degree in addition to their medical degree (Table 2).

The largest proportion (24%) of chairs thought that the single most helpful experience or training for becoming a chair was to have served as a vice chair, whereas the next largest proportion (20%) thought being an OR director was helpful, and 13% of chairs thought an MBA or other business training was helpful (Fig. 5). Nine percent of surveyed chairs had completed an MBA. Warters et al. (9) conducted a survey in 2000, of anesthesia chairs and deans, asking them to rank the relative importance of various development criteria in preparation for becoming a chair by comparing the survey year (2000) to 1990, from memory. Although a direct comparison with the current survey is not possible, it is interesting to note that chairs and deans ranked experience as an OR director highly, whereas serving as a vice chair and having a MBA achieved very low ranking in priority. When ranking advice to aspirant chairs (Fig. 6) in the present survey, chairs found achieving a MBA to be least advisable (agreeing with the Warter et al.’s survey) and stressed academic development (double or triple threat) over attempting to build a research career with NIH funding as a goal. The latter recommendation is consonant with the fact that research was ranked as one of the least helpful single experiences to being a chair (Fig. 5). Warters et al. (9) noted that peer-reviewed research and funding (which was not highly ranked) had become less important in 2000 when compared with 1990, whereas an OR directorship had increased in importance. Taken together, the two surveys suggest a decreasing emphasis on research experience as important to functioning as a current chair of anesthesiology. A further explanation for the decreased emphasis on research by current chairs of anesthesiology may rest with their relatively poorer history of NIH research funding when compared with surgical chairs, as presented above (8). In addition, this may reflect current institutional leadership priorities in selecting chairs of anesthesiology, as deans may value more apparent managerial skills than the role anesthesiology should play (with respect to research) in the academic medical center (10).

A surprisingly large proportion (30%) of current chairs have served previously as chairs, either as interim chairs in their own departments (15%) (Fig. 2) or as permanent chairs (15%) in other departments. This finding had not been anticipated in this survey, and so no question was asked of chairs as to the relative importance of serving as a chairman previously.

When asked what advice chairs would give to an assistant professor who sought to become a chairperson as a career goal (Fig. 6), chairs ranked becoming a division director with clinical, administrative, education, and research responsibilities the highest, which is consistent with the multimission role aspirant chairs would play when becoming a chair. In contrast, the need to conduct research at a level to achieve NIH funding was considered less essential (Fig. 6) and achieving a MBA the least important.

The reason for these findings can only be speculative but are in line with the concepts espoused in “The Future Oriented Department Chair “ (11); in the past, “traditional chairs” were required to have such attributes as a “track record in research, with external funding and publications in prestigious journals as

### Table 5. Grant Funding Achieved by Chairpersons during Career

<table>
<thead>
<tr>
<th>Committee</th>
<th>No. grants</th>
<th>Total dollars</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industry</td>
<td>11 (13)*</td>
<td>$0.920 (1.57)*</td>
</tr>
<tr>
<td>Federal Peer-Reviewed</td>
<td>2.7 (4.3)</td>
<td>$ 2.35 (5.87)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Committee</th>
<th>No. grants</th>
<th>Total dollars</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industry</td>
<td>5 (0–48)</td>
<td>$0.450 (0–8.0)</td>
</tr>
<tr>
<td>Federal Peer-Reviewed</td>
<td>1 (0–22)</td>
<td>$0.030 (0–25.0)</td>
</tr>
</tbody>
</table>

*Significantly different $P < 0.05 for unpaired t-test assuming unequal variances, *n* = 51.

86% of Chairs judged that academic productivity decreased during their Chairpersonship (*n* = 64).

### Table 6. Committee Involvement by Anesthesiology Chairpersons

<table>
<thead>
<tr>
<th>Committee</th>
<th>Member</th>
<th>President or Chairperson</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local</td>
<td>82</td>
<td>38</td>
</tr>
<tr>
<td>National</td>
<td>70</td>
<td>42</td>
</tr>
<tr>
<td>International</td>
<td>31</td>
<td>18</td>
</tr>
</tbody>
</table>

All values given are in percentages.
well as a national reputation, whereas in the present, for the ‘future-oriented chair,’ there is less emphasis on ‘weighing the curriculum vitae’ and greater emphasis on business and administrative experience, emotional competence and resilience, as well as ‘demonstrated competence across the missions.’”

A possible criticism of this survey, which addresses the academic achievements of current anesthesia

Figure 3. Career stage at which current chairs identified becoming a chairperson as a career goal ($n = 48$).

Figure 4. Percentage of chairs ranking as “most important” the given motivating factor in choosing to become a chairperson ($n = 52$).

Figure 5. Single experience or training that was considered most helpful to functioning as a chair ($n = 46$).
Figure 6. Rank-ordered median of advice to aspirant chairs to do at start of career ($n = 44$). (Friedman’s test, $P < 0.05$) (1 = most important; 6 = least important). Significantly different from A or B, Tukey’s multiple range test ($P < 0.05$).

Figure 7. Satisfaction of current chairs with position (correlation coefficient of duration of chairmanship versus satisfaction ($r^2 = 0.004$, $P = 0.68$).

Figure 8. Percentage of chairs desiring to pursue a particular interest after leaving chair position ($n = 47$).
chairs, is that only those chairs responded who prided themselves as being academically successful, thus biasing the data to reflect in favor of a more academic profile than the true population.

To try to address to what extent respondents might be representative of the true population of academic chairs, we attempted to review available independent data. Thus, we compared survey data for chair gender, permanent versus interim status, and AUA membership as well as professorial rank with independent data that could be determined from SAAC databases. We also compared survey data with program directors status, which could be determined from the Accreditation Council of Graduate Medical Education databases. These data were compared with survey data using a Fisher’s exact test (5) and found not to be different (Table 1). This analysis suggests that respondents, at least with respect to the independent data that could be identified, were no different from nonrespondents.

In addition, to try to address this question, we reviewed state licensing boards’ data for individual chairs. However, state licensing boards do not consistently provide the same categories of data such as age, medical school attendance, residency training, and fellowship training information that would allow comparisons with the surveyed responses, and so a valid comparison for all chairs with the survey data could not be performed.

We also determined peer-reviewed publication citation rates (before January 1, 2007) for all 132 chairperson’s names (from SAAC data) by entering their full names and two initials (one initial if only one) into the National Library of Medicine PubMed Site. To the extent possible, where there was commonality of these chairperson names with other authors cited in PubMed, information was checked with respect to co-authorship, subspecialty of interest and institutional affiliation. Citations in PubMed include letters to the editor, review articles, editorials, and peer-reviewed research published from 1962 to the present (8). However, PubMed does not include book chapters, or books authored, and not all peer-reviewed publications are cited in PubMed. Publication totals for 127 of the 132 could be determined. Two individuals could not be found using these search criteria and five resulted in questionable results due to the commonality of their last name and initials, and so were excluded. Chairpersons had a mean of 50 PubMed citations which trended to being lower (P = 0.062) than the 66 (64) peer-reviewed papers reported by the chairs themselves in this survey. The higher rate of peer-reviewed papers self reported by the chairs may be a better indication of their productivity, given the inherent inaccuracies in querying the PubMed database, and the fact that not all peer-reviewed publications are cited therein.

Similarly, with respect to federal peer-reviewed (NIH, National Science Foundation, American Heart Association etc.) funding, 55% of the chairs responding to this survey reported having received such funding through the life of their career in comparison to 30% reported from only NIH database analysis by Culley et al. (8).

Taken together, the above suggests that a representative survey, with a good response rate, may provide valuable data not readily available from other sources, to describe the characteristics and accomplishment of chairpersons of anesthesiology.

In summary, this survey documents the characteristics of current anesthesiology chairs and suggests (through a catalog of accomplishments) that although chairs value peer-reviewed research, scholarship, and academic achievement, they do not believe that significant research experience is of great benefit to functioning as a chair.

ACKNOWLEDGMENTS
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