Program Director as Webmaster? Analysis of 131 Anesthesiology Department Web Sites and Program Director Web Site Involvement and Opinion Survey.

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Original Article

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Abstract

Background: The last formal review of academic anesthesiology department Web sites (ADWs) for content was conducted in 2009. ADWs have been rated as very important by medical students in researching residency training programs; however, the rapid evolution of sites require that descriptive statistics must be more current to be considered reliable. We set out to provide an updated overview of ADW content and to better understand residency program directors' (PD) role and comfort with ADWs.

Methods: Two independent reviewers (ND and HL) analyzed all 131 Accreditation Council for Graduate Medical Education (ACGME) accredited ADWs. A binary system (Yes/No) was used to determine which features were present. Reviewer reliability was confirmed with inter-rater reliability and percentage agreement calculation. Additionally, a blinded electronic survey (Survey Monkey, Portland, OR) was sent to anesthesiology residency PDs via electronic mail investigating the audiences for ADWs, the frequency of updates and the degree of PD involvement.

Results: 13% of anesthesiology departments still lack a Web site with a homepage with links to the residency program and educational offerings (18% in 2009). Only half (55%) of Web sites contain information for medical students, including clerkship information. Furthermore, programs rarely contain up-to-date calendars (13%), accreditation cycle lengths (11%), accreditation dates (7%) or board pass rates (6%). The PD survey, completed by 42 of 131 PDs, noted a correlation ($r = 0.36$) between the number of years as PD and the frequency of Web site updates – less experienced PDs appear to update their sites more frequently ($p = 0.03$). Although 86% of PDs regarded a Web site as "very" important in recruitment, only 9% felt "very" comfortable with the skills required to advertise and market a Web site.

Conclusions: Despite the overall increase in ADW content since 2009, privacy concerns, limited resources and time constraints may prevent PDs from providing the most up-to-date Web sites for applicants and other interested audiences. PDs are aware of value of Web sites for recruitment, are typically involved in determining ADW content, but few feel very comfortable marketing a training program on the Web.

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Introduction

Residency program Web sites represent a means for residency program directors (PDs) to communicate to applicants. Chu et al. surveyed applicants who confirmed the value of department Web sites in their decision-making. They rated Web sites highly, similar to other information platforms such as internet discussion boards and forums. The counsel of personal contacts (friends and family) and medical faculty or staff were also deemed important to the process of residency selection. Printed information or brochures were noted to be of less value.[1] A national survey of Canadian medical students reported that mentors, peers and family/friends were the most influential on applicant decision-making, while Web sites, career counselors, and a national residency guide were cited as notable factors in program selection.[2] When considering the above platforms for impacting medical student decision-making, the department Web site remains a critical portal for PDs, allowing for timely and accurate information to be communicated to prospective candidates.

In 2005, Gaeta et al. reported that student applicants to anesthesiology training programs concern themselves with anesthesiology department Web site (ADW) content rather than aesthetic quality.[3] Chu et al., based on 2009 data, confirmed lingering inadequacies in content features of ADWs, and found that only 2% of residency applicants were completely satisfied with a majority of academic ADWs.[1] Medical students find Web sites most useful in critical phases of the application process for residency such as (1) deciding where to apply and (2) where to interview.[4] The absence of important Web site content, as defined by students, may reflect an incorrect assumption that PDs utilize Web sites primarily to market training program(s) to medical student applicants.

In this manuscript, we review all 131 accredited academic ADWs to capture an updated landscape of published content. We also report on the findings of a survey of anesthesiology PDs regarding their involvement with Web site content, updating and marketing. The goal of survey analysis was to determine audiences for ADWs, to investigate the frequency of content updates, and to understand the degree of involvement of PDs in ADWs. This study allows residency programs not only to identify on-going Web site content deficiencies as compared to peer departments in anesthesiology, but also to review underlying resource and management decisions that may directly impact recruitment of new residents.

Materials and Methods

A protocol submitted to the George Washington University Institutional Review Board (IRB) requesting permission to survey anesthesiology PDs on Web site management was deemed exempt and approved.

Evaluating content of ADWs

All 131 Accreditation Council for Graduate Medical Education (ACGME) accredited ADWs were eligible for review. Web sites were identified on the ACGME Web site[5]. In order to ensure that the most up-to-date site was discovered, a web search with Google's search engine

(Google, Mountain View, CA) was employed to find the active Web site for each department. All 131 Web sites were scrutinized independently by two medical students (ND, HL) under pre-defined criteria. Disagreements were settled by consensus. Web site evaluation by each reviewer was completed individually during the following dates: April 2011 to May 2011.

The Web sites were examined for 60 items grouped into six categories: General (Homepage, Aesthetics, Research), Applicant (ERAS info, ACGME), Current Residents & Medical Students, Faculty, Alumni, and Fellows. A binary system (Yes/No) was used to assess whether ADWs contained certain features that were previously reported,[1] or new features that were noted during a preliminary review of a random subset of ten Web sites.

Survey of Anesthesiology Residency Program Directors
A survey for PDs was created following an informal inquiry of PD interest in descriptive statistics of ADWs at a national meeting of PDs. The survey was refined by our institution's PD (JB) based on feedback from the national sampling of responses. The anonymous, web-based survey was distributed via an electronic mail announcement by the Academic Anesthesiology Core Program Directors (AACPD) listserv on March 25, 2011. PDs were forwarded a link to the Survey Monkey Web site (Portland, OR) where the survey was available from March 2011 until June 2011. No incentives were offered for completion of the survey.

Ten questions consisting of 17 items that sought either whole number responses, Likert scoring ("not at all", "sometimes", and "very"), or rank-order responses (1 – 8, 1 = best) were used. Questions related to demographic information, level of involvement, frequency of Web site updates, cost allocated to Web site management, belief of importance, comfort level, familiarity with other Web sites, and targeted audiences for ADWs (see Supplemental Material).

Statistical analysis
Inter-rater reliability was calculated with Win-Pepi (Jerusalem, Israel). Percentages were reported with 95% confidence intervals, which were calculated using "VassarStats" on-line calculator (Poughkeepsie, NY). Descriptive statistics for program directors such as means and standard deviations were calculated with Microsoft Excel (Redmond, WA). Spearman Rank correlation test and Fisher exact test were used with SAS, version 9.1.3 (Cary, NC) to analyze survey data from program directors.
Results

Evaluating content of ADWs
A kappa value of 0.49 was calculated for inter-rater reliability for the two reviewers ND and HL. Percentage agreement was calculated among the two reviewers at 85%.

Table 1 shows results from the review of 131 ADWs by two medical students (ND and HL). Several general content features were notable. 13% of anesthesiology departments still lack a Web site with a homepage that features links to the residency program and educational offerings. 35% of programs have no link to departmental research and only 21% list recent publications. An up-to-date calendar of department events is unavailable for 87% of programs. Only 20% of programs provide links for giving or donations.

A section devoted to applicants is absent for 16% of program Web sites. Furthermore, only half (55%) of Web sites contain information for medical students, including clerkship information. Only 20% of programs report any details of a Categorical PGY-1 experience on their Web site. Programs rarely report accreditation cycle length (11%), date of accreditation (7%) and board pass rates (6%).

For current residents, more than half (58%) of programs do not provide links to an intranet site for the residency program from the department internet. Only 56% of programs provide a list or profile of current residents in the program, and 21% list recent graduates – 15% detailing alumni placements upon graduation. While faculty listings, with or without profiles, are commonly provided (79%), only 19% of programs give any information regarding applying for a position with the department.

Survey of Anesthesiology Residency Program Directors
The PD survey was completed by 42 of 131 PDs, giving a response rate of 32%. Table 2 describes the demographics of the respondents with respect to age and years of experience. A mean age of 48 years and a standard deviation of 7 years were calculated. As of June, 2012, the overall mean age of all PDs nationally was 51 with a standard deviation of 8 years according to data provided by the Society of Academic Anesthesiology Core Program Directors. Mean experience was 6 years with a median of 4 years and a standard deviation of 6 years.

The most common role (38%) that PDs played in the management of the Web site was to filter information to a Webmaster in the anesthesiology department (Figure 1). Four of the respondents answered "other" and described various specifics for filtering information to a member of the department or volunteer.

51% of Web sites were updated "annually" by PD respondents, while 18% update "every six months" and 15% update "every two-three months" (Table 3).

Figure 2 shows the target audience as ranked by anesthesiology PDs with the top audiences being "Medical Student Applicants" (25%) and "Medical Students at the Host Institution" (19%). 86% of survey respondents indicated that a Web site is "very" important in the recruitment of medical student applicants. However, only 9% of PDs felt "very" comfortable with the skills required to advertise and market a Web site for a particular audience (Table 4). 95% of PDs who completed the survey "sometimes" or "often" look at the Web sites of other anesthesiology departments to determine trends in content while 5% "never" look at other department Web sites.

Table 5 demonstrates the correlation between years as program director and frequency of Web site updates. Spearman Rank correlation analysis provides a correlation coefficient of 0.36 between these two variables (p = 0.03). Put another way, years as program director shares roughly 13% of its variability with frequency of updating the ADW. A scatter plot of this relationship (Figure 3) demonstrates that less experienced respondents are more frequently inclined to update their Web sites. Using Fisher exact testing, no further relationships could be found. More specifically, years of experience did not correlate with degree of comfort with the

skills to advertise and market an ADW and a PD's age did not correlate with the frequency of updates or comfort level with the skills to advertise and market an ADW.

Discussion

Since its invention in 1958, the Internet has gained significant traction as a source of information in society; in particular, medical students use the Internet extensively in their training to communicate and find information.[6] Current residency applicants are highly engaged in using the Internet to aid in the evaluation of medical residency programs. Such activity was noted in a study done by Chu et al. where 56% of medical student applicants to residency program reported first visiting the department's Web site when deciding whether to apply to the residency program.[1]

Our study reports a descriptive breakdown of information available to applicants and highlights limitations of ADWs. For example, while surveyed PDs agree that current applicants are the most important target audience, 13% of Web sites still lack a program home page. Although this represents a 5% improvement from the 18% reported by Chu et al.[1] for 2009 data, it is clear that a number of programs still ignore the Web as a tool for recruitment at the time of the current review.

Current residents were rated third on the scale of important audiences for the ADW. In a prior study by Fortin residents identified access to their personal schedules, including block and call, and program event information as their greatest information needs.[7] This material is typically absent from the public ADWs due to privacy concerns and likely reflects the lower prioritization of current residents for these sites. Faculty recruitment was rated quite low by PDs. It is therefore not surprising that a mere 19% of programs use their Web site for recruitment of faculty.

Survey data exploring rationale for missing data indicated two main reasons. Either content was believed to be conspicuously absent to hide perceived weaknesses or was omitted due to resource limitations that would render certain content outdated before scheduled updates. Demographics for "Alumni" (21%) and "Current Residents" (56%) were missing from many program Web sites. Similar limitations were noted in the evaluation of pediatric residency programs in 2007.[8] ACGME accreditation cycles and board pass rates are likewise missing for 94% of programs. The authors speculate that departments may be fearful of alienating strong applicants by displaying weak or imperfect data, such as medical school attended or an ABA Board Examination pass rate that is less than 100%, for current residents or alumni. This may be particularly true when the current cohort of residents does not reflect a program's desired pedigree.

Fears of inadequacy may also be hampering Web site reporting on research activity, a core mission of an academic department. Evaluation of ADWs determined that 35% of institutions have no link to on-going or prior departmental research activity, with only 21% reporting current publications. While Chu et al.[1] reported comparable findings, the paucity of Web site-reported research may be an important indicator of a program's lack of dedication to research; alternatively, these findings may demonstrate a paucity of resources for Web site maintenance.

Two groups report an essential factor in medical student assessment of anesthesia residency programs to be the presence of recently updated information.[1,9] Both papers concluded that publicly outdated information would result in a negative first impression of the program by potential candidates. Accordingly, a program reporting on current research without the resources to update the data with sufficient frequency runs the risk of giving negative impressions to applicants. This may also explain the general deficiency in Web publication of information requiring frequent updates such as "Calendar" (13%) or "Current Grand Rounds Schedules" (18%).

An appreciation for the extent of resources available for department Web site development and management may be reflected in survey responses regarding frequency of updates, financial resource commitment and availability of professional support personnel. A large majority (87%) of PDs reported updating their ADW less often than monthly, and 54% reported updating their ADW at most annually. While a yearly updating schedule may correspond to the annual nature of the recruitment season for residency training, infrequent updates may also signify a lack of dedicated time for ADW management. Further, over 80% of PDs surveyed reported either ADW investment of less than $1000 or did not know of any financial investment by the department in Web site development. Since 98% of survey respondents confirm active participation in the ADW, either by direct control (22%) or filtering information to a webmaster in the Department or University, a lack of resources is likely experienced by most PDs.

Several factors limited the conclusions that can be drawn from our survey and Web site review. The authors acknowledge that this study did not assess Web site quality or design features and conclusions did not reflect these aspects of ADWs. With respect to review of ADWs for content, assessment of content features of ADWs was a subjective task, and frequent updates to Web sites following the study period limit the generalizability of conclusions that may be drawn from descriptive analysis. Binary scoring of content yielded adequate inter-rater reliability and percentage agreement between reviewers. Non-response bias was also a concern for our study; however, 32% of anesthesiology PDs responded to our survey which is similar to the 37% response rate obtained by Chu et al.[1] For an internet survey such as ours, 30% response would be considered average.[10] Selection bias may have affected survey response since technical requirements for survey completion may have discouraged less Web-savvy PDs from participation. The demographic range for PD age and experience mirrored the sample of PDs reported by De Oliveira et al. in 2011 (Table 2).[11] Thus, we can conclude that a representative sample was obtained.

Previous studies have addressed the Web site needs of medical student applicants[2]. The purpose of our study was to provide a general review of ADW content for academic anesthesiology departments, and to better understand residency PDs' role and comfort with ADWs. ADWs have added substantial content since Chu's 2009 survey.[1] However, content is still lacking in a number of areas that may be seen as important to medical student applicants. The majority of PDs update ADWs at least annually and do so with medical students in mind as the primary audience for the site. Despite their involvement, only 4% of PDs are very comfortable with the skills required to market a program to their target audience (Table 4). Our findings signal the

need for departments to devote more resources to ADWs as the sites take on an increasingly important role.

Table 1: Results of Review of Anesthesiology Department Web sites (% present)

General Information	Information for Applicants and Medical Students	Information for/about Current Residents	Information about Faculty	Alumni Information	Fellows Inform-ation
Link from homepage to 'Residency Program'/Education (87%)	ERAS/application information (84%)	List of or profiles of current residents (56%)	List of faculty (79%)	List of recent alumni (21%)	Any information pertaining to fellows (65%)
Link from homepage to 'faculty'/'About us' (81%)	Resident life/city life (58%)	Resident salary/benefits (51%)	Job opportunities (19%)	Where alumni work (15%)	
Link from homepage to 'Research' (65%)	Med student page/clerkship information (55%)	Links to society web sites (eg. ASA)/journals (49%)			
Link from homepage to 'Patients" (44%)	Program Director contact info (42%)	Intranet link (42%)			
News/events section (43%)	Message from Program Director (32%)	Current Grand Rounds schedule (18%)			
Mission statement (28%)	Options for PGY-1 (20%)	Current lecture schedule (11.5%)			
Office staff/technician directory (23%)	Information for visiting students (18%)	Resident manual (8%)			
Recent* research publications (21%)	ACGME cycle length (11%)	Contact info for residents (7%)			
Link for department donations (20%)	Date of ACGME accreditation (6.5%)	Current rotation schedules			

		(2.29%)			
Department newsletter (15%)	Board pass rate of most recent graduates (6%)				
Current calendar (13%)					
Website feedback tool (7%)					

Table 2. Program Director Demographics

	Total PDs	Mean	Standard Deviation	Minimum	Maximum	Median
What is your age (years)?						
PD Survey (Current Study)	42	48	7.2	36	66	48
SAACPD data	124	51	8.1	32	73	53
De Olivera Study	98	50	-	-	-	-
How many years have you been a program director?						
PD Survey (Current Study)	42	6	6.4	0	35	4
De Olivery Study	98	6.5	-	-	-	-

Table 3. How often do program directors update the department Web site? (n=39)

	Frequency	Percent
Daily	1	3
Every 2 weeks	2	5
Monthly	2	5
Every 2-3 months	6	15
Every 6 months	7	18
Annually	20	51
Every few years	1	3

Table 4. I am _____ *comfortable* with the skill set required to advertise and market a Web site for a particular audience (n=39)

	Frequency	Percent
Not at all	20	48
Somewhat	18	43
Very	4	9

Table 5. Demographic comparisons to frequency and comfort with Web site management

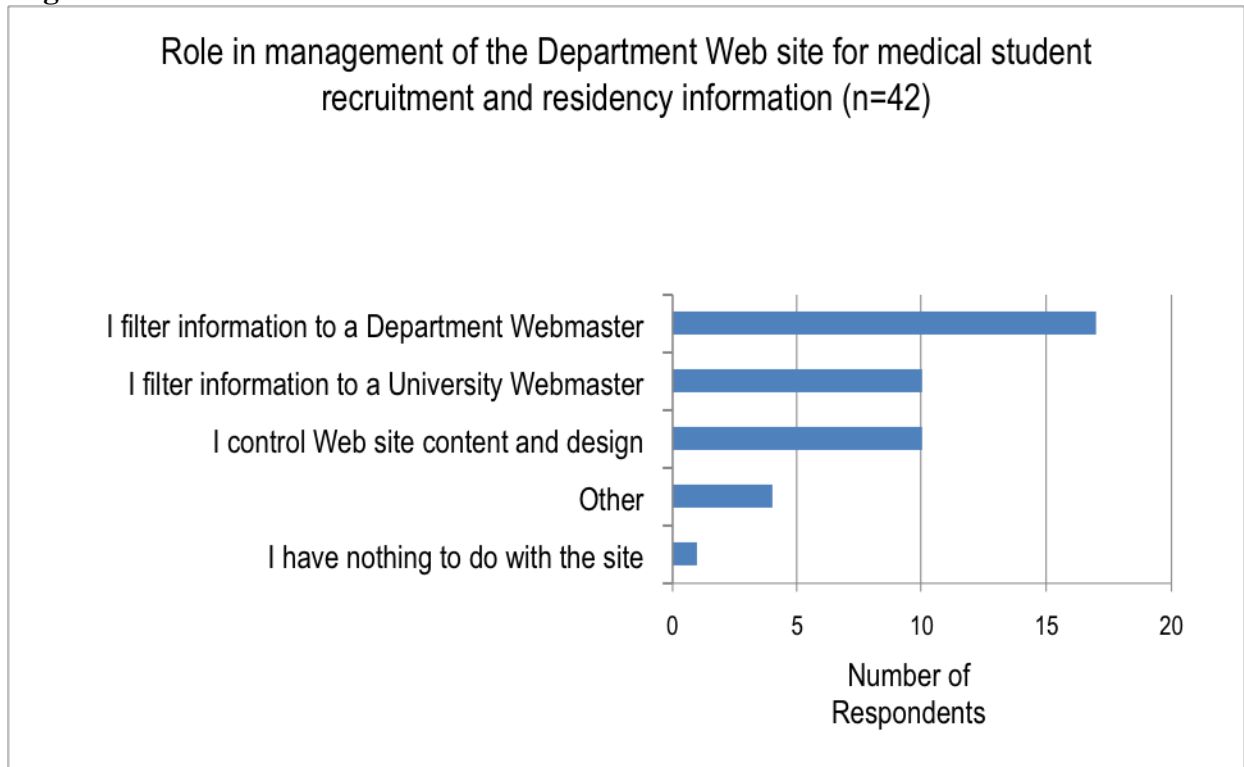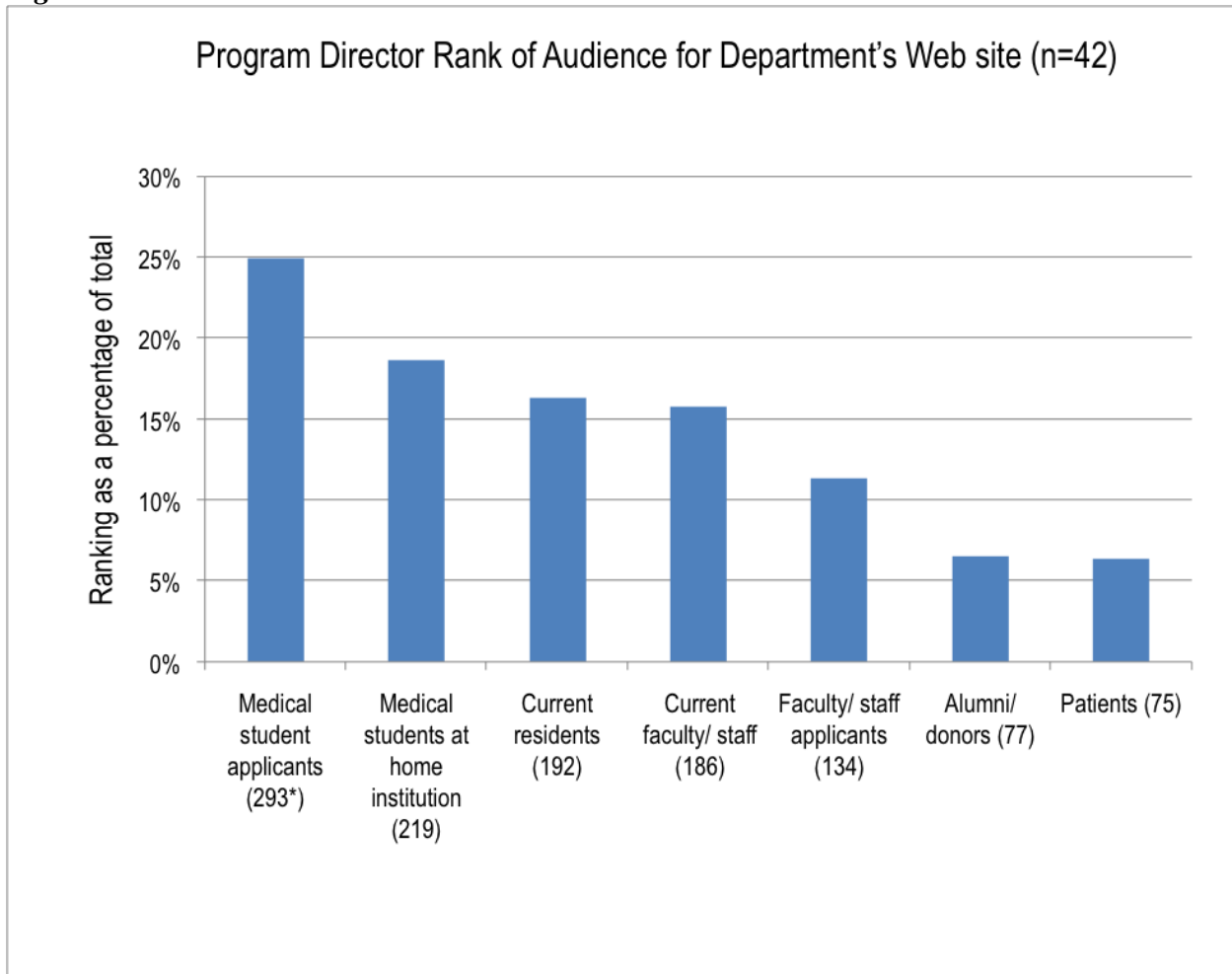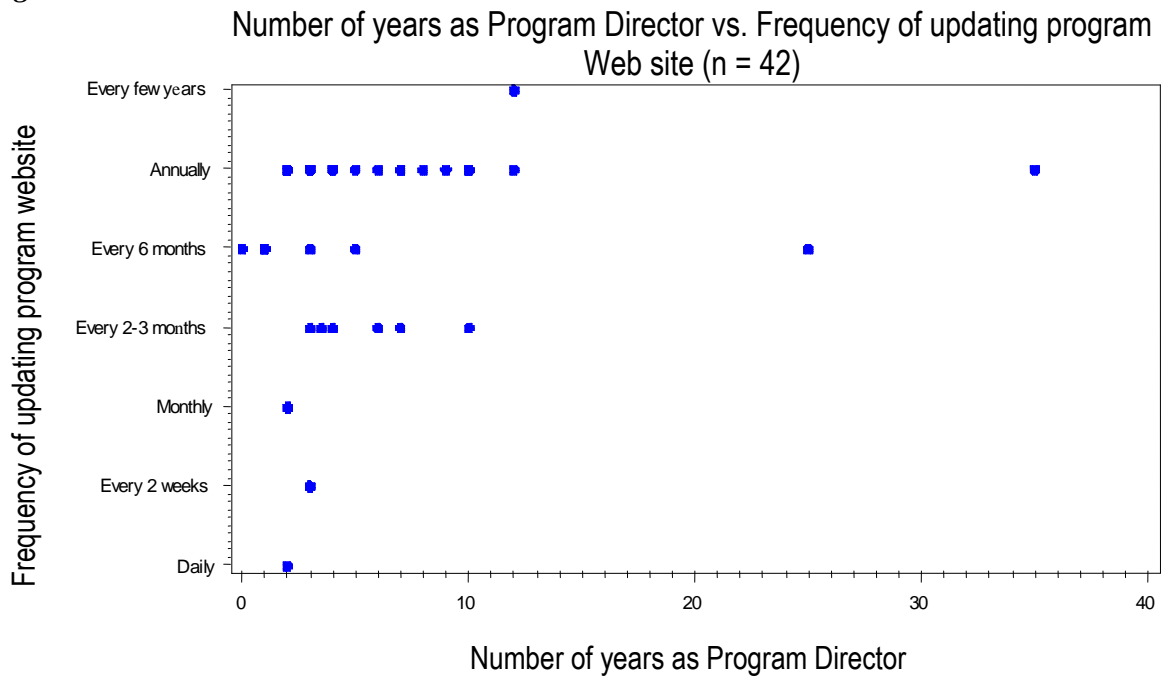|	n	Spearman Correlation Coefficients	*P* value
PD "Age" vs. "How often" updating Web	39	0.06	0.71
PD "Age" vs. How "comfortable" with Web	42	-0.27	0.09
"How many years" as PD vs. "How often" updating Web	38	0.36	0.03*
"How many years" as PD vs. How "comfortable" with Web	42	-0.19	0.23

Figure 1.

Role in management of the Department Web site for medical student recruitment and residency information (n=42)

I filter information to a Department Webmaster

I filter information to a University Webmaster

I control Web site content and design

Other

I have nothing to do with the site

0   5   10   15   20

Number of Respondents

Figure 2.

Program Director Rank of Audience for Department's Web site (n=42)

Figure 3.

Number of years as Program Director vs. Frequency of updating program Web site (n = 42)

Acknowledgements

References

1.   Chu LF, Young CA, Zamora AK, Lowe D, Hoang DB, Pearl RG, Macario A. Self-reported information needs of anesthesia residency applicants and analysis of applicant-related web sites resources at 131 United States training programs. Anesth Analg 2011; 112(2): 430-9.

2.   Bussett, S, Law, C, Morra, D, Ginsburg, S. The relative influence of available resources during the residency match: a national survey of Canadian medical students. J Grad Med Educ 2011; 3(4): 497-502.

3.   Gaeta TJ, Birkhahn RH, Lamont D, Banga N, Bove JJ. Aspects of residency programs' web sites important to student applicants. Acad Emerg Med 2005; 12(1): 89-92.

4.   Embi PJ, Desai S, Cooney TG. Use and utility of Web-based residency program information: A survey of residency applicants. J Med Internet Res 2003; 5(3): 85-95.

5.   ACGME Accredited Program and Institutional Listing - Public Access. Available at: http://www.acgme.org/adspublic/.

6.   Chu LF, Chan B. Evolution of web site design: implications for medical education on the internet. Comp Bio & Med 1998; 28(5): 459.

7.   Fortin VI AH, Luzzi K, Galaty L, Wong JG, Huot SJ. Developing an internet-based communication system for residency training programs. J Gen Internal Med 2002; 17(4): 278-82.

8.   Kumar A, Sigal Y, Wilson E. Web sites and pediatric residency training programs in the United States. Clin Pediatrics 2008; 47: 21.

9.   Mahler SA, Wagner M-, Church A, Sokolosky M, Cline DM. Importance of Residency Program Web Sites to Emergency Medicine Applicants. J Emerg Med 2009; 36(1): 83-8.

10.   Response rates. (2011, Sept 21). Retrieved from http://www.utexas.edu/academic/ctl/assessment/iar/teaching/gather/method/survey-Response.php

11.   De Oliveira GS, Almeida MD, Ahmad S, Fitzgerald PC, McCarthy RJ. Anesthesiology residency program director burnout. J Clin Anes 2011; 23: 176.

Legends

Table 1.	*In the past year; ERAS: Electronic Residency Application Service; ACGME: Accreditation Council of Graduate Medical Education; PGY-1: Post Graduate Year1

Table 2.	SAACPD = Society of Academic Anesthesiology Core Program Directors, All data has been adjusted to 2012 values.

Table 5.	*p-value < 0.05

Figure 2.	*PDs ranked Web site audience from $1 - 8$ (1= primary). A score of 8 was given to the primary rating, 7 to the secondary rating, and so on. This figure lists the total score for each audience. The maximum possible score was 336. No respondent ranked the "Other" category.