Characteristics of Civilian Postdoctoral General Dentistry Programs


Abstract: U.S. civilian (non-VA/non-military) Advanced Education in General Dentistry (AEGD) and General Practice Residency (GPR) programs were identified (n=208) and surveyed. The assessment evaluated infrastructure support, populations served, services provided, and trainee stipends. One hundred thirty-one programs responded (thirty-two AEGD, 64 percent/ninety-nine GPR, 63 percent). Sixty-nine programs were HRSA-funded (53 percent), and sixty-three (47 percent) were nonfunded. One hundred and five responses identified hospital/medical center resources; fifty-six indicated dental school support. Mean faculty support was similar regardless of program type or HRSA funding. Mean first-year positions in AEGDs were greater than GPRs. Mean first-year GPR positions were greater in funded than in nonfunded programs. A comparison of AEGD and GPR programs showed that residents in GPRs treated more children, medically intensive, economically/socially disadvantaged, and in-patient/same-day surgery patients (p<0.05). Residents in AEGDs treated more healthy adults (p<0.05). GPRs treated more lower fee (no pay, Medicaid, welfare/general relief, Medicare, and capitation/HMO) patients. AEGDs treated more insurance/private pay patients (p=0.001). No differences existed in comprehensive care and emergency visits between AEGDs and GPRs. GPRs treated more hospital-based patients. The mean stipends for GPRs ($32,055) and AEGDs ($22,403) were different.

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Postdoctoral General Dentistry (PGD), Advanced Education in General Dentistry (AEGD), and General Practice Residency (GPR) programs are major components of advanced dental education to which nearly 30 percent of senior students apply annually.1 Changes in both the internal and external environments have impacted trainee recruitment and program operations. Some examples of influential factors are: the increases in the cost of predoctoral education resulting in escalating student debt; difficulties in recruiting and retaining faculty due to retirements and competition with the private sector economy; and the national prominence of issues related to access to dental care and changes in the political/policy landscape, such as the proposed legislation in New York State to mandate a postdoctoral year in dentistry as a prerequisite for licensure.2-5

To properly plan for the future of PGD programs, it is essential that we understand their current status. The U.S. Health Resources Services Administration (HRSA) contracted with a team from the UCLA School of Dentistry to conduct a review of PGD programs. This review is the third in a series of reviews of PGD programs that have taken place over the past twenty years. This article focuses on civilian PGD programs and their infrastructure support, populations served, type of care provided, and trainee stipends.

Methodology

The purpose of this research study was to compare the program characteristics of civilian AEGD and GPR programs and to assess differences between programs that received HRSA support during the years 1985 through 1998 and those that did not. Stipend data were identified from the Annual Report on Advanced Dental Education, Council on Dental Education, and American Dental Association.6-11 The detailed methods are presented in the three other articles in this series that appear in this issue.12-14 Surveys were mailed to 316 programs, of which 208 were civilian (non-VA, non-military). Follow-up surveys were sent and follow-up telephone calls were made to program directors to correct missing data. The
survey included questions covering the following areas: program infrastructure, program emphasis, patients served, payment sources, services provided, and open-ended questions.12,13

Infrastructure includes the types of resources supporting the program and the number and composition of faculty, staff, and resident positions. Seven categories of sponsorship (dental school, hospital/medical center, Veterans Administration (VA), military, federal funding, Ryan White, and other) were included, and respondents were encouraged to check all that apply. Information was sought on the number of full-time, part-time, and volunteer faculty and staff and the number of both first-year and second-year resident positions. The eleven patient population groups were children under five years of age, children five to seventeen years of age, economically disadvantaged, geriatric, developmentally disabled, psychiatric patients, residents of nursing homes, medically compromised, HIV/AIDS, healthy adults, and in-patients. Categories for responses included 0 percent (0), less than 10 percent (1), 10-49 percent (2), and greater than or equal to 50 percent (3). Following exploratory principal components analysis, two summed patient categories—pediatric (children under five, children five to seventeen, and developmentally disabled) and medically intensive (medically compromised, geriatric, psychiatric, and residents of nursing homes)—were constructed. The proportion of patients served for the two summed scales and the four single item variables were compared for AEGD and GPR programs to determine types of patient populations served (see Atchison et al. in this issue for a detailed description of summed patient categories13). Directors were also asked to estimate the number of annual patient visits for comprehensive care, emergency care, and hospital care.

In keeping with HRSA’s goal that access to care be available to people regardless of financial resources, directors were asked to report types of patient payment sources their programs accepted. Using a scale of 0 percent, less than 10 percent, 10-49 percent, and 50 percent or more, program directors indicated the percentage of patients in the following payment categories: no pay, self-pay full fee and private insurance. The resulting scale ranged from 0 to 6. The second scale, ranging from 0 to 15 measured payment sources from more economically disadvantaged patients (lower fee), was the sum of numbers from five items: no pay, Medicaid, welfare/general relief, Medicare, and capitation/HMO. The item for self-pay sliding fee did not correlate well with either of the summed scales and was used as a single item measure.

A χ² analysis and t-tests and Wilcoxon Ranked Sum tests were utilized to compare the differences between AEGD and GPR programs and between programs that received HRSA funding and those that did not. Administrative data and program director responses were used to determine whether a program had received grant funding over the thirteen-year period, that is, from 1985 to 1998.

Results

Of the 208 identified programs, surveys were received from 131 (63 percent) program directors. AEGD responses totaled thirty-two of fifty eligible programs (64 percent), while GPR responses were ninety-nine of a possible 158 (63 percent). Sixty-nine programs were HRSA-funded (53 percent: twenty-eight AEGD, forty-one GPR); and sixty-two (47 percent: four AEGD, fifty-eight GPR) were nonfunded. Since only four of the thirty-two AEGD programs were nonfunded, comparisons were generally not made to nonfunded AEGD programs because of the small sample size.

Infrastructure

Of the AEGD responses, twenty-eight (88 percent) were HRSA-funded programs and four were nonfunded. Of the GPR responses, forty-one (41 percent) were funded by HRSA, and fifty-eight (59 percent) were nonfunded. Table 1 identifies the categories of infrastructure resources (faculty, salary, staff, stipends) by program type, funded or nonfunded.

The greatest number of responses (105 responses from 131 programs) identified hospital/medical center as a resource. Dental schools were second with fifty-six responses. Eleven nonfunded GPR programs versus seventeen funded programs listed a dental school as a resource (p=0.0163).
Ninety-four GPR directors as compared to 11 AEGD directors identified a hospital/medical center as a resource (p<0.0001). Six nonfunded GPR programs and eleven HRSA-funded programs reported some type of federal funding (Indian Health Service, National Dental Health Service Corps, etc.) as a resource (p=0.0358).

Faculty, staff, and resident FTE also represent infrastructure available to support a training program. Table 2 lists the mean numbers of FTE reported by programs. There was no statistically significant difference in the mean number of full-time faculty (2.5) between AEGD and GPR programs. Likewise, there were no differences in the number of full-time faculty in funded versus nonfunded programs. Funded GPR programs reported an average of 6.3 part-time faculty as compared to 2.9 for nonfunded program (p=0.0044). GPR programs reported an average of sixteen volunteer faculty as compared to five for AEGD programs (p=0.0098). AEGD programs reported a mean of 7.7 full-time staff and 0.5 part-time staff. GPR programs reported a mean of 8.5 full-time staff and 1.0 part-time staff. There were no significant differences in the number of staff supporting the programs.

The average number of first-year AEGD positions (6.3) was greater (p=0.0140) than first-year GPR positions (4.6). The average number of first-year GPR residents (5.7) in funded programs was greater than in nonfunded (3.8) GPR programs (p=0.0009). There were no statistically significant differences in second-year positions. Overall, AEGD reported a higher mean number of residents (7.5) than GPR (5.3) (p=0.0095). Funded GPR programs reported a higher mean number of residents than nonfunded GPRs (p=0.0019).

### Table 1. Resources for general AEGD/GPR programs

<table>
<thead>
<tr>
<th>Resources</th>
<th>Total</th>
<th>AEGD</th>
<th>AEGD</th>
<th>GPR</th>
<th>GPR</th>
<th>Nonfunded</th>
<th>Funded</th>
<th>Nonfunded</th>
<th>Funded</th>
<th>*P</th>
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<td>28</td>
<td>&lt;.0001</td>
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<td>&lt;.0001</td>
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<td>7</td>
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<td>7</td>
<td>6</td>
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*P-values reflect results of Chi-square test of homogeneity

### Table 2. Mean number of faculty and staff per program, by AEGD and GPR

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<tr>
<th>Mean Number</th>
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<th>AEGD</th>
<th>GPR</th>
<th>GPR</th>
<th>Nonfunded</th>
<th>Funded</th>
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<td>3.1</td>
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<td>(2.9)</td>
<td></td>
<td>(2.9)</td>
<td>(2.2)</td>
<td></td>
<td>(2.3)</td>
<td>(3.6)</td>
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<tr>
<td>Part-Time Faculty</td>
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<td>(5.7)</td>
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<td>(7.9)</td>
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<tr>
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<td>(9.5)</td>
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<td>(3.8)</td>
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<tr>
<td>Volunteer Staff</td>
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<td>0.3</td>
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<tr>
<td></td>
<td>(0.2)</td>
<td>(0.7)</td>
<td></td>
<td>(0)</td>
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<td>(0.7)</td>
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<tr>
<td></td>
<td>(2.2)</td>
<td>(1.3)</td>
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<td>(1.2)</td>
<td>(2.3)</td>
<td></td>
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<td>(2.4)</td>
<td>(4.4)</td>
<td>0.0019</td>
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</table>

NS = Not significant

*P-values reflect results of T-tests of equal means
Directors were asked to indicate what increases in infrastructure occurred in the most recent five-year period and whether any increases could be attributable to funded or nonfunded status. Table 3 reflects the changes in number of full-time faculty and residents over the past five years. There were no significant differences in faculty changes. Thirty-seven percent of funded programs reported an increase in the number of first-year resident positions, while 13 percent reported a decrease (p=0.02). For second-year resident positions, 30 percent of funded programs reported increases, and only 6 percent reported decreases in number of positions (p=0.003). There was no statistically significant difference when comparing funded AEGD to funded GPR programs. However, with the first-year resident positions, there was a statistically significant difference (p=0.03) between funded GPR (41 percent increased) and nonfunded GPR (18 percent) programs. Similar results were observed for second-year residents (p=0.001).

### Populations Served

**AEGD versus GPR.** Types of patient populations served in AEGD and GPR programs were compared for six patient categories as shown in Table 4, which presents both means and medians. The following statistically significant findings (p<0.05) were noted: GPRs treated more children (mean 4.2 vs. 3.2) and cared for more medically intensive (mean 6.5 vs. 5.8) and in-patient/same-day surgery patients (mean 1.2 vs. 0.6), while AEGDs treated a significantly larger population of healthy adults (mean 2.3 vs. 1.9). On the child measure (range 0-9), a mean less than 5 indicates that children represent less than 10 percent of the patients served. In contrast, in AEGD programs, the mean of 2.3 for healthy adults (range 0-3) represented 10-49 percent of their patient pool.

With regard to payment sources for patient services, GPR programs provided more care to lower fee populations (p<0.0001), while AEGD programs treated more insurance/private pay individuals.

**HRSA Funded versus Nonfunded.** A comparison of patient populations served by funded AEGD and funded GPR programs showed that GPR programs served a larger proportion of children, medically intensive, economically/socially disadvantaged, and inpatients than did funded AEGD programs (p<0.05) (Table 5). Funded AEGD programs reported treating a higher proportion of healthy adults (p=0.0274).

With regard to payment sources, funded AEGD programs reported treating more insurance/private pay patients than funded GPR programs (p=0.0014), while funded GPR programs reported caring for more lower fee patients (p=0.0002).
Care Provided. The survey identified care provided as the number of visits during 1999-2000 in the following categories: emergency/episodic, comprehensive care, or hospital-based care. The mean number of patient visits for all program types during fiscal year 1999-2000 was 6,868 visits with a mean of 5.8 residents per program, yielding an annual per resident visit count of 1,184, or approximately five to six patient visits per work day. T-tests yielded no differences in the mean number of comprehensive care and emergency visits between AEGD and GPR programs (Tables 4 and 5). For hospital patients, no differences were observed between AEGD and GPR programs. However, a comparison of funded AEGD with funded GPR programs showed a statistically significant difference, with AEGD reporting a mean of fifty-seven patient visits compared to 299 visits for GPR (p=.0085). Because of the large difference in standard deviations, a Wilcoxon rank sum test was used to compare hospitalizations for all AEGD and GPR. This analysis confirmed that GPR programs treat more hospital patients than AEGD programs.

Trainee Stipends. Funded GPR programs reported mean stipends of $32,020, while nonfunded programs averaged $32,094. The mean stipend for all general GPR programs was $32,055 with a 95 percent confidence interval of $30,382 to $33,728.
Funded AEGD programs reported mean stipends of $22,119, while nonfunded programs averaged $24,250. The mean stipend for all general AEGD programs was $22,403 with a 95 percent confidence interval of $19,985 to $24,821. The difference between the mean GPR and AEGD stipends is statistically significant at p<0.0001 (Table 6).

### Discussion

This current review of postdoctoral general dentistry training is the most comprehensive study to date. In 1993, Handelman et al.15 interviewed a total of fifty-seven program directors. Although not indicated in the report, it is assumed that those were selected from a pool of 286 programs listed in the 1985-86 Council on Dental Education, Annual Report on Advanced Dental Education, and, as such, the number of program directors surveyed represented 19.9 percent of all programs. This current study identified 208 viable general programs of which 131 program directors responded for an overall rate of 63 percent. Of the fifty-seven interviewed in the Handelman study, nineteen were AEGD and thirty-eight were GPR programs. Comparatively, this study received responses from thirty-two of fifty AEGD programs (64 percent) and ninety-nine of 158 GPR programs (63 percent). Of the nonresponders, 66 percent were not funded and 77 percent were GPR programs. This could result in a bias in our surveyed sample since a large number of nonfunded (51/113=43 percent) and GPR (59/158=37 percent) programs failed to respond.

The survey data also present limitations, such as few responses from unsuccessful program directors and a high turnover of some program directors resulting in voids in historical recall. Further, there are some programs that changed directors and sponsorship or even shifted from a GPR to an AEGD or the reverse during the review period of 1985-98.

### Infrastructure

Infrastructure as defined in this study included, but was not limited to, faculty, staff, salary, and stipend support. Since few programs have a single line of infrastructure support, respondents were given the opportunity to identify all resources in the list provided to them. The fact that the majority (105/131) of responses identified hospital/medical center as a resource is not surprising because 73.7 percent (233/316) of all PGD programs are GPRs, and they are typically hospital or medical center-based.

With regard to AEGD infrastructure support, it was expected that directors would report dental school support being more common (2.5 times) than hospital/medical center. It is interesting to note that eleven of fifty-four AEGD responses listed hospital/medical center for support. The assumption is that, in recent years, postdoctoral dental programs are seeking Medicare Graduate Medical Education (GME) funding for both resident stipends and program support. This funding requires a conversion from postdoctoral student status to resident status and a fiscal relationship with a GME-funded hospital. Thus, more dental school-based AEGD programs are negotiating with GME-funded hospitals. This trend is likely to continue to increase over time. As for GPR programs, they have been part of the GME funding system for several decades.

In terms of federal funding, the dominant number of AEGD responses were from HRSA-funded programs. This is also not surprising in that the Title VII, Section 747 Grant Program for General Dentistry had been a driving force for the creation and expansion of new programs and training positions.

Faculty, staff, and trainee FTE represent the other key infrastructure element. There were no statistically significant differences between AEGD and GPR programs and only minor differences between the funded and nonfunded categories, except in the

<table>
<thead>
<tr>
<th>Table 6. Mean trainee stipends on general AEGD/GPR programs</th>
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<tr>
<td><strong>Mean Values</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>All</td>
</tr>
<tr>
<td>Funded</td>
</tr>
<tr>
<td>Nonfunded</td>
</tr>
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</table>

Only 4 nonfunded AEGD programs
*p-values reflect results of T-tests of equal means*
categories of volunteer and part-time faculty and the mean number of first-year GPR residents. One would expect funded GPR programs to have more first-year slots because the primary purpose of the HRSA grant program is to expand the number of first-year training positions. The likely reason there is no difference in the average number of first-year slots in AEGD programs is that most of the AEGD grant funding has been directed toward the creation of new programs, rather than expanding existing ones, with the average number of positions per program, old or new, being very similar. This premise is consistent with the dramatic growth in AEGD positions from forty-two in 1981 to 473 in 1997.16

When evaluating the changes in infrastructure over time, we see that the increase in mean full-time faculty from 1.0 FTE, as reported by Handelman in 1993, to 2.5 FTE as reported in this study is notable. Although the number of first-year training positions per program remained similar with a mean of 6.3 AEGD and 4.6 GPR trainees compared to 6.2 AEGD and 4.2 GPR trainees per program in 1993, faculty support has apparently increased, suggesting a stabilization of the funding base for the programs. This reiterates the conclusion that the increase in training positions is primarily due to increases in the number of programs, rather than program expansion.

The impact of HRSA funding on infrastructure is clearly evidenced by the larger percentage of funded programs reporting increases in both first- and second-year resident positions when compared to nonfunded programs. What is even more notable is the higher percentage of funded programs (13 percent) that reported a decrease in first-year positions as compared to nonfunded programs (7 percent). It is likely this represents a reduction in first-year positions once the HRSA funding is lost. The fact that only 10 percent of funded GPR and 19 percent of funded AEGD programs reported decreases in first-year positions is also notable. These data speak to the importance of HRSA funding for first-year positions and validates HRSA’s strategy to provide seed support for the initial three years until programs achieve self-sufficiency. A consideration for HRSA is to evaluate providing maintenance funding for programs following the initial grant period.

**Populations Served**

Postdoctoral general dentistry programs are typically either dental school- or hospital-based and generally serve as safety net providers to underserved populations. Thus, the usual patient population includes working class, uninsured, and Medicaid patients. With that as a premise, this study sought to identify any differences between program types or funding status.

It is important to appreciate that both AEGD and GPR programs reported that they provided service to substantial populations of economically/socially disadvantaged patients. Having stated that, it was interesting to find so few differences between AEGD and GPR programs with regard to patient categories. However, it was not surprising that the data support the common belief that GPRs treat more inpatient/same-day surgery patients than AEGD programs. An interesting finding was that GPRs treat more children than AEGDs. In agreement with Handelman’s findings in 1993, this study demonstrated that AEGD programs treated a significantly larger population of healthy adults than GPR programs.

Because of the small pool of nonfunded AEGD respondents, this study could not identify differences in patient pools by funded or nonfunded status. It is important to keep in mind that the stated mission of the Health Resources and Services Administration is to improve the nation’s health by ensuring equal access to comprehensive, culturally competent, quality health care for all.17 This mission serves as the cornerstone for funding from the Title VII, Section 747, General Dentistry Grant Program. Given that 20 million children (25 percent of persons under nineteen years of age) suffer 80 percent of all tooth decay,18 one would expect funded programs to see an equivalent if not greater proportion of children as compared to nonfunded programs. A recent report to the Secretary of Health and Human Services and Congress from the Advisory Committee on Training in Primary Care Medicine and Dentistry identified oral health as one of the primary care workforce challenges, now and in the future.19 Thus, further study of this issue is needed.

The fact that AEGD programs treat more patients that are full pay or have private insurance and that GPR programs provide more care to the underserved replicates Handelman’s 1993 findings. This is also consistent with program sponsorship, that is, a predominant number of GPR programs are housed in hospitals or medical centers, which typically care for underserved populations.

**Types of Care Provided**

The mean number of annual patient visits per resident of 1,184 is similar to the 1,295 per resident
visits reported in the 1993 Handelman study, which also found that GPR programs had higher patient visits than AEGD programs (1,440 vs. 1,065 visits). This current study found no difference in the overall number of visits between AEGD and GPR programs. A consideration when evaluating patient visits is the increased time necessary to manage patients with complex medical histories, such as organ transplants, cardiovascular disease, cancer, etc. In addition, the time allotted for patient care competes with the need for in-service training and, in some cases, didactic courses to keep trainees abreast of the dramatic changes that have occurred in dental materials and restorative techniques in the past decade.

The fact that GPRs provide more hospital care is also consistent with common assumptions about case loads by program type. This distinction of hospital-based care in GPR programs remains constant even when programs are funded.

Trainee Stipends

GPR stipends (average $32,055) continue to be higher than AEGD stipends (average $22,403). There are two possible explanations for this. First, since the momentum shifted toward the initiation of more AEGD programs, more positions are being created using HRSA support. This support sets guidelines for trainee stipends that are lower than typical residency salaries. Second, because GPRs are predominantly hospital- or medical center-sponsored, their salaries typically fall under GME and are set at levels equivalent to the medical residents. It is anticipated that this discrepancy in stipend will diminish over time as more AEGD programs develop GME relationships.

Conclusion

Sixty-three percent of all civilian PGD programs reported data on infrastructure, populations served, care provided, and trainee stipends. The historic perspectives that GPRs are typically hospital-based and that AEGDs are dental school-based and focused more on general dentistry still ring true. GPR residents provide more inpatient/same-day surgery and treat more economically/socially disadvantaged patients than do AEGD residents. AEGD residents treat more self-pay, full fee, and privately insured patients, while GPR residents treat more Medicaid, welfare, capitated/HMO, and no pay patients. No significant differences exist between AEGD and GPR programs with regard to comprehensive care and emergency visits.

GPR residents receive higher stipends than AEGD residents. This is most likely due to funding through GME; however, it is expected that this gap will close over time as more AEGD programs develop GME relationships with hospitals. As this occurs, one might see GPR and AEGD programs looking more similar than dissimilar.

Funding support for PGD programs is a critical issue, and HRSA funding has clearly impacted the growth of training positions, with the overwhelming majority of programs maintaining or increasing positions over time. However, further investigation is required to identify differences between program types and funding status.

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