

**Evaluation of Strategies to Recruit Oral Health Care Providers  
To Underserved Areas of California**

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## **Executive Summary**

Central to efforts to increase access to dental care has been a focus on the supply, distribution and diversity of a workforce willing and able to provide care for underserved populations. While there are no definitive numbers, between 3 and 9 million Californian's are lacking access to care or have unmet dental need. Provider supply is declining and current providers are maldistributed, leaving many areas of the state with an inadequate dental workforce. This report evaluates the impact of the multitude of programs in California to recruit and retain oral health care providers in underserved areas in California who are serving underserved populations. Three main strategies are utilized to address provider distribution.

*Practice environment strategies* are short-term solutions intended to influence practice location and patient base. Loan repayment and scholarship programs, changes in licensure processes, credentialing of foreign-trained dentist, and adjustments to scopes of practice are mechanisms that seek immediate impact on provider distribution. These strategies have the most easily measured impact on access to care. Loan and scholarship programs provide 130,000 measurable patient visits annually, with the potential to more than triple this amount through program expansions in the next few years. Each cohort of registered dental hygienists' in alternative practice (RDHAP) will add 34,000 annual patient visits for underserved populations. Data were not available on the other programs within this strategy, but it is likely that these programs add significantly to the availability of care in the communities where providers practice.

*Dental education strategies* seek to influence eventual practice location by increasing student's awareness of access to care issues and by sensitizing them to working with underserved patients during their dental training. Curriculum changes emphasizing non-traditional care models, clinical rotations in community-based settings, and general practice dental residencies are all strategies attempting to influence students' choice to practice in underserved communities. It is difficult to evaluate the direct impact of all of these strategies, however general practice residents provide approximately 60,000 patient visits annually, and if residency were mandatory this would increase to five times this number of patient visits. The planned expanded dental school rotations in underserved clinics will add another 40,000 patient visits annually. Some of these programmatic efforts are in a nascent stage, so results won't begin to be available for several years.

*Applicant pool strategies* seek to influence the pool of available providers many years down the road. Outreach, tutoring, and mentoring programs for high-school and college students, and post-baccalaureate programs for college graduates, particularly disadvantaged or minority students, all attempt to influence the mix of type of eventual dental providers. The impact of these programs is very difficult to measure.

Some of the newer programs are tracking their efforts, but these results won't be available for years. Regardless, these types of programs are essential to ensure the diversity and cultural competence of the dental workforce.

Interventions within each of these strategies are necessary to form a continuum; the longer-term strategies affecting the applicant pool and the shorter-term strategies affecting practicing oral health care providers. The following recommendations focus on actions that the California Legislature and State Agencies can take to increase the number of dentists, dental hygienists and dental assistants in underserved areas. They also offer a guide to setting priorities for funding and program development by other government agencies, educational institutions, foundations, professional associations, and other entities.

### Policy Recommendations:

#### *Existing Program Expansions*

1. Applicant pool strategies should be expanded and supported significantly to increase the cultural diversity of the dental workforce.
2. Dental education strategies should be expanded by increasing the number of general dental residency training positions in the state toward a goal of having 100% of dental school graduates attend a dental residency.
3. Practice environment strategies should be expanded through additional funding for loan and scholarship programs that place providers in underserved communities.

#### *New Program Considerations*

4. A team of dental providers, not just dentists, is necessary for comprehensive care. Expand programs focused on the supply, distribution, and competencies (particularly public health skills) of allied oral health care providers so an appropriate mix of providers is available in underserved areas.
5. Increase the supply of allied dental providers in underserved areas using the strategies described in this report, most of which have focused solely on dentists.
6. Expand scope of practice for allied dental providers to increase capacity in dental practices and clinics, particularly in underserved areas.
7. Reduce supervision requirements for allied dental providers, allowing them to work in community-based settings that can not support a dentist.
8. Develop a clearinghouse of information on practice opportunities in underserved communities and programs that can assist in practice in these areas.

9. Current funding streams support the status quo of cottage dental practices unable to meet the needs of underserved populations. Ensure funding and reimbursement aligns with workforce and policy goals by fully supporting alternative practice models and adequately reimbursing for indigent care.

#### *Data Collection and Program Evaluation*

10. Data on participants and program impact is lacking. Many questions were unanswered. Collect data on practice patterns of:
  - Foreign Dental Graduates, International Dental Program graduates & Welcome Back Center users
  - Registered Dental Hygienists in Alternative Practice and other allied providers as appropriate
  - Participants of the Robert Wood Johnson Pipeline Professions & Practice Program
  - Licensure by Credential Applicants
  - Providers finishing a general practice residency
  - Graduates of a high school mentoring, recruitment of post-baccalaureate program

The programs evaluated in this report were not developed to solve all of California's oral health workforce needs, yet they clearly have a strong impact in the underserved communities where they place providers. However, the impact of current program efforts falls far short of addressing the oral health care needs of Californians. So great is the gulf between what these efforts are able to produce and the growing epidemic in dental health, that a new model of addressing this public health crisis needs to be considered. Such a strategy should be an amalgam of educational, loan repayment, practice reform and finance of care.

#### *Potential New Models of Dental Care*

The state should consider new pathways to training in general and pediatric dentistry.

11. UCSF and UCLA should develop a hybrid DDS/MS program of five years of training leading to both the DDS and a Masters in Pediatric Dentistry. Train students in new team arrangements, better integrated into general health and public health efforts. Students enrolling in this special track would receive free dental education, but would be obligated for five years of service through the public dental clinics network.
  - Create five new education-service centers that could provide new practice models that would be consistent with the educational program described above
  - Use the integrated dental education and service centers to model small-scale sustainable practices that would be financially viable in rural settings

- Use the integrated dental education and service centers to pilot the creation of a cadre of new oral health professionals (with expanded function and independent practice) trained not only in dental care but in public health

## **Introduction**

Access to oral health care has been shown to be a significant problem for many segments of the population in the United States. Whether termed a “hidden epidemic” or a “neglected epidemic,” the numbers are staggering (USDHHS 2000) (Dental Health Foundation 1997). Across the country, an estimated 138 million Americans, including 39 million children, do not have private dental insurance (Manski, Macek et al. 2002). In California, over 4 million people live in communities with a shortage of dental providers (Mertz 2000). This lack of coverage and shortage of providers contribute to huge disparities in oral health. California’s children have twice as much untreated decay as their national counterparts. Among high school students, nearly half of Asian and African-American and three-quarters of Latino children need dental care (Dental Health Foundation 2000). While private dental practices in the state flourish, it is extremely difficult to attract providers to dental safety net facilities. The growing recognition of this crisis among professionals and policy makers has elicited a slow but steady legislative and programmatic response. Central to these new efforts has been a focus on the supply, distribution and diversity of a workforce willing and able to provide care for underserved populations. This report is the first to evaluate the impact of the multitude of programs in California to recruit and retain oral health care providers in underserved areas in California who are serving underserved populations, and seeks to answer several questions about these efforts.

- What are the federal, state, and private programs in California that impact the number of oral health care providers working in underserved communities?
- What impact do the programs have in relation to existing need?
- Do the programs, policies, and legislation work in tandem towards addressing the distribution of services?
- In what way could existing programs be improved or expanded upon so they better articulate with one another?

The California Program on Access to Care (CPAC) supported this work under the auspices of the California Policy Research Center of the University of California. CPAC supports applied policy research to address issues of access to health care for low-income populations. This report builds on previous CPAC studies of recruitment strategies for physicians and expands the theoretical framework and knowledge base to dental providers (Grumbach, Coffman et al. 1999).

## **The California Landscape**

Access to oral health care in California is a complex issue. This report examines the programmatic and policy responses specific to the problems of provider supply and distribution. These problems may include a lack of providers in a geographic area, and/or a lack of certain types of providers such as pediatric dentists, culturally competent dentists, or dentists willing to accept Denti-Cal, sliding-scale, or indigent patients.

### Underserved Populations

Underserved populations are those who have been shown to have disparities in access to care and/or in health status. These populations tend to be minority, infants and toddlers, elderly, poor, rural, medically compromised or developmentally disabled (Mertz, Manuel-Barkin et al. 2000). Examining all these populations separately in California gives a sense of the magnitude of the problem. Population numbers are derived from the most current California Population Survey (State of California 2003). Fifty-five percent of California's population, almost 19 million people, are non-white. Of these, 3 million are below the poverty level, at significant risk of being dentally underserved. Medicare does not cover dental care for seniors, so the 2.5 million seniors in California without private dental insurance are at risk of being underserved, particularly the 415,000 who are institutionalized. Approximately 4.4 million Californians live below the poverty level and are at risk of being underserved. Medi-Cal covers 6 million of our poorest citizens. However access to Medi-Cal dental services has been shown to be extremely problematic, with 54% of recipients reporting difficulty with access to dental care, meaning at least 3 million of these people are underserved (Medi-Cal Policy Institute 1999). Approximately 5 million people live in rural communities, 1.7 million of whom live in communities with a shortage of dental providers (Mertz 2000).

Using these broad parameters we estimate that *at minimum* 3 million California residents likely have a problem with access to dental care (see Appendix 2 for methodology). When applying the rates of untreated dental caries as documented by the National Center for Health Statistics to the California population by age, poverty status and race, we estimate that approximately 2.5 million children (0-17), 5.8 million adults (18-64), and 800,000 seniors (65+) are likely to have untreated dental decay in California, for a total of 9 million California residents likely to have unmet dental need (CDC 2003; State of California 2003). Nationally, 51.4% lack private dental insurance; applying this rate in California would represent over 17 million residents, only 6 million of which have public coverage, leaving 11 million with no source of insurance (Manski, Macek et al. 2002). Given these figures, our estimates of the number of underserved are likely extremely conservative



### Dental Education and Provider Supply

California's five dental schools<sup>1</sup> graduate about 550 students per year from their traditional programs and an additional 95 students from their International Dentist (ID) programs. Nationally, 18% of all dental graduates enter specialty training, 26% enter residencies in general dentistry, while about 52% enter private practice immediately after graduation (Weaver, Haden et al. 2002). In addition, there are 21 dental hygiene programs which graduate approximately 383 registered dental hygienists (RDH) per year (California Dental Association November 2003).

There are approximately 150,000 clinically active dentists in the US, 23,000 of which are practicing in California (Mertz 2000) (ADA 2000). The national dentist-to-population ratio is 58 per 100,000 while the California ratio is slightly higher at 65 dentists per 100,000 population. Projections show that the dentist-to-population ratios will decline over the next 20 years (Valachovic, Weaver et al. 2001). Existing providers are neither geographically nor racially and ethnically distributed in a way that meets the needs of California's population (Manuel-Barkin, Mertz et al. 2000; Mertz and Grumbach 2001). Less than 7% of professionally active dentists are Hispanic or African-American which is not in parity with the 40% of the California population these racial groups represent (Valachovic, Weaver et al. 2001; Weaver, Haden et al. 2002; State of California 2003). All of these statistics bring into question the availability of adequately distributed and culturally competent care.

There are an estimated 15,430 RDHs practicing in California. While 99% of the RDH workforce is female, 15% are African-American and Hispanic, almost double the representation found in dentistry (Committee on Dental Auxiliaries (COMDA) 2003). Dental Hygiene as a profession has been expanding and is projected to grow 37% between 2000 and 2010 (Bureau of Labor Statistics 2002). Little data are available on the distribution of RDHs; however, current supervision regulations require the majority of them to work in private dental offices, indicating that their distribution mirrors that of dentists.

### Dental Shortage Areas in California

Underserved areas exist when the number and type of providers in a region are unable to meet the needs of the population; however, the region may vary, depending on the population of interest. As a result of this variability, several methods are employed to designate an area as underserved in terms of access to oral health care. Dental Health Professional Shortage Areas (DHPSAs) are the most common

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<sup>1</sup> Private Schools: Loma Linda, University of the Pacific, University of Southern California. Public Schools: University of California Los Angeles, University of California San Francisco

designation, and are used to determine eligibility for programs such as the National Health Service Corps (NHSC). A DHPSA is based mainly on the dentist-to-population ratio in a geographic area (less than 1:5000), but can also include special populations or facilities such as prisons that have limited access to dental care. Federally Qualified Health Center (FQHC) look-alikes and rural health centers (RHCs) also qualify as DHPSAs. Currently, there are 68 DHPSAs in California. However, because designation as a DHPSA is not automatic and involves a lengthy application process, many underserved communities that meet the criteria have not received the designation (Orlans, Mertz et al. 2002).

Counties designated as Denti-Cal underserved represent court-determined areas where dental services have been deemed to be underutilized by individuals with dental insurance through the state Medicaid program. Currently, 16 rural counties qualify for this designation (including Alpine, Amador, Calaveras, Colusa, Del Norte, Glenn, Imperial, Inyo, Lassen, Merced, Modoc, Mono, Plumas, Sierra, Tehama, and Trinity).

Underserved areas can also be determined by examining the community health center (CHC) capacities in an area and the vacancies for providers. If a CHC has no capacity to provide dental care or if it has the capacity but can not fill an open position, it is likely that there is limited access to oral health care for populations relying on the CHC (often low-income, rural, or inner-city populations).

California is somewhat of a paradox in that it has a higher than average supply of dental providers as well as a higher than average rate of dental disease. There is a clear mismatch between the care delivery model and oral health needs of the population. Anywhere from 3 million California residents may suffer from a lack of access to care and up to 9 million may have untreated dental disease. Increasing provider supply in underserved areas with providers trained and willing to provide care for underserved populations is not the only solution, but it is an important step towards improving oral health care in California.

### **Strategies for Increasing Provider Supply in Underserved Areas**

Many factors influence oral health care providers in their choice of practice sites. A majority (93%) of dentists provide services through a private practice model (American Dental Association 2000). These dentists often choose a location based on financial considerations. Therefore, an area with a high concentration of potential patients with private insurance or the ability to pay out-of-pocket may attract a large number of dental providers. On the other hand, sparsely populated or low-income areas may have a paucity of dental providers willing to provide care because it is considered inefficient from a financial perspective (Coffman J, Rosenoff E et al. 2002). In addition, providers weigh personal factors such as the

preferences of other family members, attractiveness of certain geographic areas, or the type of pre-existing dental facilities and services available in an area. Programs and policies to encourage oral health care providers to practice in underserved areas fall into one of three categories (Grumbach, Coffman et al. 1999):

**Practice-environment strategies** encompass short-term solutions to influence a provider's location and patient base. These solutions often involve loan repayment or other incentives for providers to settle in underserved areas or encourage oral health care providers to accept a larger number of underserved patients. Other practice-environment strategies include expanding the scope of practice for dental hygienists or altering the licensure process for oral health care professionals.

**Dental education strategies** seek to increase students' awareness of barriers to dental care access within different populations during their dental training in order to sensitize them to working with underserved populations. Some schools incorporate issues surrounding access to dental care into their coursework. Additionally, many schools offer opportunities for students to gain direct experience in providing dental care for underserved populations through rotations or residencies.

**Applicant-pool strategies** involve programs that seek to influence the pool of available providers many years down the road. Applicant-pool strategies include high school and college outreach programs to interest students in oral health careers and working with underserved populations. Other programs seek to prepare students from underserved or disadvantaged backgrounds for dental school through additional coursework, mentoring, or test preparation. Finally, schools may seek to admit students who have an interest in working with underserved populations.

### **Current California Policies and Programs**

In response to the growing evidence of the lack of access to oral health care within California, a multitude of new programs and policies have been introduced, in addition to several long-standing programs, in an attempt to attract providers to underserved areas of the state (Dental Health Foundation 2000; United States. Dept. of Health and Human Services. 2000). However, at the same time that California has experienced increased activity regarding dental workforce issues, a financial crisis has overtaken the state. This crisis has impacted the budgets of both public and private organizations involved in efforts to improve access to dental care. As a result, some recruitment and retention programs for dental professionals have recently ended and others have experienced significant funding cuts. This report catalogues current efforts within California to increase the number of oral health care providers working

in underserved communities. Programs and policies will be examined within each of the three main types of approaches discussed earlier: practice-environment, dental education, and applicant-pool strategies.

### Practice-Environment Strategies

Practice-environment strategies are currently the most common method of recruiting oral health care providers to underserved areas of California.

#### *Loan Repayment Programs*

Oral health care providers willing to practice in underserved areas are eligible for several loan repayment programs available within the State (Table 1). These loan repayment programs may be particularly attractive to dentists with high student debt. The average debt of students attending public dental schools in 2002 was \$86,000, and the average debt of students attending private dental schools was \$136,000 (Weaver, Haden et al. 2002). The National Health Service Corps (NHSC), the Indian Health Service (IHS), the California State Loan Repayment Program (CSLRP), the California Dental Association Foundation (CDAF), and the Health Professions Education Foundation (HPEF) all administer loan repayment programs for oral health care providers in California. In addition to these five ongoing loan repayment programs, the Dental Board of California is currently developing a one-time loan repayment program. Finally, the Delta Dental Plan of California Loan Repayment program is entering its last year.

The NHSC is perhaps the best known of these programs, and has served as a model since its inception in the 1970's. As a result, although each of the California programs is unique in its details, several key features are common to all. In exchange for agreeing to practice at an approved underserved site for a specified amount of time (usually one or two years), a participating dentist or dental hygienist receives loan repayment. Each program defines "underserved" using different criteria, but in general, restricts the locations at which participants can practice.

Dental school graduates have increasingly utilized loan repayment programs in recent years. For example, in the first ten years of the CSLRP, funding was allocated on a first-come, first-served basis. Over this time, due to the low number of applicants, all qualified providers were granted funding. In the past three years, the number of applicants has exceeded the available funding.

**Table 1: Loan repayment & Scholarship programs for dental graduates in California with service requirements**

	Current Status	Funding Source	Selection Process	Provider Criteria	Award amount	Site Criteria	Current CA Field Strength
<b>National Health Service Corps (NHSC) Loan Repayment and Scholarship Program</b>	Continuing	Federal	Practitioners working at sites of highest need are prioritized	Dentist/hygienist must commit to 2 years of full-time service	Y1=\$25,000 Y2=\$25,000 Y3=\$35,000 Y4=\$35,000	DHPSA	19
<b>Indian Health Services (IHS) Loan Repayment Program</b>	Continuing	Federal	First-come, first-served	Dentist/hygienist must commit to 2 years of full-time service	Y1=\$20,000 Y2=\$20,000 Y3=\$20,000 Y4=\$20,000	Designated IHS clinic or tribal health care site	18
<b>California State Loan Repayment Program (CSLRP)</b>	Continuing	Federal, with matching funds from sites	In past, first come, first-served. In future, will be competitive, criteria TBA.	Dentist/hygienist must commit to 2 years of full-time service	Y1=\$25,000 Y2=\$25,000 Y3=\$35,000 Y4=\$35,000	DHPSA, also other sites including community clinics	7
<b>Health Professions Education Foundation (HPEF) Loan Repayment and Scholarship Program</b>	Continuing	Private	Competitive application process	Dentist/hygienist must commit to 2 years of full-time service	Y1+Y2=\$10,000	MUA	2
<b>Delta Dental Loan Repayment Program</b>	Ends after 2003	State Medi-Cal funds	Competitive application process	Dentist must commit to 1 year of full-time service	Y1=\$25,000	MediCal underserved county, at least 50% of patients on MediCal	4
<b>California Dental Association Foundation (CDAF) Loan Reduction Program</b>	Continuing	Private	Competitive application process	Dentist must commit to 1 year of full-time service	Y1=\$35,000 Y2=\$35,000 Y3=\$35,000	Community clinic or other dental practice with at least 50% dentally underserved	1
<b>Dental Board of California</b>	Not yet implemented; will be one-time program	California State Dentistry Fund	TBD	Dentist must commit to 3 years of full-time service	Y1=\$25,000 Y2=\$35,000 Y3=\$45,000	TBD	n/a (will be 30 total)

As a result, the California Office of Statewide Health Planning and Development (OSHPD) is currently working to develop new criteria to be used to evaluate applicants to the CSLRP. Recently passed AB820 requires OSHPD to distribute awards equally among rural and urban shortage areas, restricting the flexibility in choice of sites but increasing resources in rural communities. Alternately, many of the newer loan repayment programs have less rigid rules for determining site eligibility, when compared to traditional programs such as the National Health Service Corps. In the new CDA Foundation Dental

Graduate Loan Reduction Program, sites can be judged eligible by qualifying as a traditional DHPSA, or by the number of Denti-Cal and Healthy Families patients served, whether services are available on a sliding-fee scale, and other factors.

Widening the pool of eligible sites may have benefits as well as costs for underserved populations. One important benefit is that providers may be more willing to participate in loan repayment programs if they have more flexibility in choosing where to practice. In the long term, greater provider satisfaction with their site may lead to higher retention rates. Another advantage is an increase in access to care for underserved communities not included in the more traditional DHPSA criteria. A significant drawback may be a tendency for providers to seek positions at the better off underserved sites, leaving the most severely underserved areas with unfilled positions.

Each loan repayment program uses a different funding model; although only the CSLRP requires participating clinics to match the amount of loan repayment provided (see Table 2) thereby stretching available funding much further than

most other loan repayment programs. Given the increasing popularity of the CSLRP, it appears that many underserved clinics are willing and able to pay this extra price in order to recruit new dental

Although currently available loan repayment programs in California have together helped to attract many oral health care providers to underserved areas of the state, critics argue that the restrictive nature of many of these programs prevents many oral health care providers from participating. In 2001, the California Legislature passed AB 668, which mandated OSHPD to conduct a study examining the feasibility of establishing a new “California Dentist Loan Forgiveness Program” to address these concerns. This potential loan repayment program was designed to provide more flexibility for participating dentists, and address many of the perceived shortcomings of other loan repayment programs such as the CSLRP. OSHPD found several areas in which a new loan repayment program could differ from existing programs (Office of Statewide Health Planning and Development 2002):

1) Utilization of non-federal funding sources. By utilizing alternative sources of funding such as California General Fund appropriations, professional licensure fees, or contributions from philanthropic sources, a new loan repayment program could be free from many of the restrictive requirements associated with federal funding.

2) Usage of criteria other than DHPSAs. The current CSLRP program approves sites for oral health care providers based on restrictive federal government requirements. An alternative program could simply identify Medical Service Study Areas (MSSAs) with disparities in dental care access, which would allow more areas within the state to qualify as shortage areas and would eliminate the need for the lengthy application process used to qualify sites under the current CSLRP.

3) Allowing dentists to participate on a part-time basis. Most of the other programs require dentists to practice at an approved facility on a full-time basis. An alternative loan repayment program could offer dentists the opportunity to work part time at qualified sites while also working in a private practice.

4) Establishing criteria allowing qualification of private practice sites. Currently, there are many private practice sites that see a significant number of underserved patients, but do not qualify for loan repayment under other programs. An alternative program could develop “pilot private dental practices” that would qualify as safety net providers and allow practitioners at these sites to receive loan repayment.

5) Improving coordination among loan repayment programs. OSHPD proposes to conduct a systematic review of each of the loan repayment programs that they administer (including NHSC, CSLRP, and HPEF) to determine how to best coordinate them, to the extent possible.

providers. However, requiring a financial commitment of up to \$60,000 over four years in addition to the salary and benefits for a dental provider may preclude community clinics with the fewest resources from participating.

**Table 2. CSLRP federal and site contributions**

	<b>Federal Contribution</b>	<b>Site Contribution</b>	<b>Total</b>
Year 1	\$12,500	\$12,500	\$25,000
Year 2	\$12,500	\$12,500	\$25,000
Year 3	\$17,500	\$17,500	\$35,000
Year 4	\$17,500	\$17,500	\$35,000
Total	\$60,000	\$60,000	\$120,000

Most loan repayment programs offer dentists \$25,000 to \$35,000 per year for several years. As a result, the per-provider investment in this program often exceeds \$100,000. However, these providers are likely to provide at least 10,000 patient visits over a 4-year period, meaning the subsidized cost per patient visit is \$10 on average. Assuming a 50% retention rate for providers in these communities, after 5 years the subsidized cost per patient visit drops to \$6 and after 10 years the subsidized cost per patient visit drops to just \$4.50 (on average). Interestingly, this is less than the difference between most procedural Medicaid rates and usual and customary rates (UCR).

### *Scholarship Programs*

Both the NHSC and the HPEF offer scholarships for students in dental and dental hygiene schools who make a commitment to practice in an underserved area after graduation. The HPEF scholarship program offers students \$10,000 per year for up to two years, in exchange for a two-year service commitment; however, few dentists or hygienists participate in this program, possibly due to the fact that other programs offer more funding and a wider variety of sites from which to choose. The NHSC scholarship program offers students tuition payments and a living stipend; for each year of aid received, students must agree to serve for a year at a high priority NHSC shortage site.

Scholarships that do not come with service commitments may be more attractive to students, but also do not come with any guarantees that students will enter service in an underserved area after graduation. Although awards such as the UCSF Osher Scholarship and the CDA Foundation Scholarship may provide positive recognition for students who have experience or interest in working with underserved

populations, they have not been proven as a successful method of attracting providers to underserved areas.

**Table 3: Scholarship programs for dental graduates in California *without* service requirements**

	Current Status	Funding Source	Selection Process	Recipient Criteria	Award amount	Site Criteria	Current CA Field Strength
<b>California Dental Association Foundation (CDAF) Allied Dental Health Scholarship Program</b>	Continuing	Private	Varies by dental society	No service requirement	\$500	None	96
<b>California Dental Association Foundation (CDAF) Scholarship Program for second-year dental students</b>	Under review	Private	Varies by dental school	No service requirement	\$2,000	None	15
<b>UCSF Osher Scholarship</b>	Continuing	Private	Competitive application process (takes into account propensity to serve underserved)	No specific service requirement	Y1=\$5500 Y2=\$5500 Y3=\$5500	None	3

A significant drawback to service commitment scholarships is that students must commit to a very rigid career path very early in their training. In recent years, the NHSC scholarship program has worked to make the restrictive nature of the service commitment very clear to potential participants. Additionally, the NHSC has increased the support network for recipients by working with dental schools to incorporate dental access issues into the curriculum and by recruiting dental school faculty members as NHSC Ambassadors to provide mentoring and support for recipients throughout their dental training.

*Loan Repayment vs. Scholarship Programs*

In comparing the success of the NHSC loan repayment and scholarship program, loan repayment was found to be equivalent or more successful on all measures (Konrad, Leysieffer et al. 2000). For example, loan repayment participants had higher one-month retention rates at their original site (57% vs. 21%) and at all underserved sites (79% vs. 62%). Additionally, loan repayment participants reported higher satisfaction with their overall experience in the NHSC (62% vs. 44%). The authors suggest two possible reasons for the different outcomes between the loan repayment and scholarship programs. First,



participants in the loan repayment program tend to have more experience and relatively stable life and career goals. Scholarship recipients may be more focused on the need for financial assistance. Secondly, there are a larger number of sites available to loan repayment participants while scholarship recipients are limited to the sites of highest need.

#### *Retention in Underserved Communities*

A recent evaluation of the NHSC program (Konrad, Leysieffer et al. 2000) revealed that between the years 1980 and 1996 only 22% of dentists remained at their original service site one month or longer after completion of their term of service. However, when retention was redefined to include any underserved site, 52% of these dentists continued to serve for one month or longer. The study noted that retention increased significantly over the period studied, and a majority (71%) of dentists serving in the NHSC in the year 2000 projected that they would stay at their current site for one or more years after completing their service requirement.

In recent years, the NHSC has increasingly emphasized loan repayment over scholarships, which may account for the significant increase in retention between 1980 and 1996. Yet the NHSC estimates that this current field strength fills only about 12% of the national demand for dentists in designated underserved areas. In California there are 51 oral health care providers (mostly dentists) currently fulfilling their service obligation for scholarship and loan-repayment programs. Collectively, these professionals provide approximately 130,050 visits per year for 39,409 underserved persons (See Appendix 2 for methods).

#### *Professional Licensure*

In the last several years, much activity around the licensure and scope of practice of dentists and allied dental providers has been crafted to impact the number and types of oral health care providers available to treat underserved populations in California. Table 4 provides a summary of relevant legislation.

#### *Registered Dental Hygienists in Alternative Practice (RDHAP)*

RDHAP was first created in the 1980s as a California Health Manpower Pilot Project (HMPP) to allow Registered Dental Hygienists (RDHs) to practice independently. Although RDHAPs are actually able to perform fewer procedures than RDHs working under the supervision of a dentist, the advantage of this new classification is the ability to establish independent dental hygiene practices. Twenty-one RDHs participated in the original program, but the pilot ended, rendering the original participants unable to practice independently. In 1997, AB560 reestablished RDHAP but restricted the practice locations of

newly trained RDHAPs to specific settings including schools, residences of the homebound, residential facilities, and DHPSAs (see SIDEBAR).

**Table 4: Recent legislation related to the licensure and scope of practice for oral health care professionals trained in the United States**

<b>Legislation</b>		<b>Current Status</b>
<b>RDHs &amp; RDAs</b>		
AB 560	Registered Dental Hygienists in Alternative Practice (RDHAP)	Enacted in 1997
SB 2022	Outlines scope of practice for RDH and specifies no supervision needed for RDH in public health settings	Enacted in 2002
SB 1955	Intent to pursue creation of separate Dental Hygiene Board	Enacted in 2002
SB 1589	Allows RDHAP to practice at “safety net” facilities	Enacted in 2002
AB 2818	Licensure by credential for dental hygienists	Enacted in 2002
SB 362	Authorizes specific functions that may be performed by dental assistants, registered dental assistants, or registered dental assistants in extended functions and would also revise the functions to be performed by a registered dental hygienist in alternative practice	Enacted in 2003
<b>Dentists</b>		
AB 1428	Licensure by credential for dentists	Enacted in 2001
AB 539	Licensure of 3 <sup>rd</sup> and 4 <sup>th</sup> year dental students as RDH	Not passed this session

There are several factors that limit the number and success of RDHAPs in increasing access in underserved areas. First, after the passage of AB560 in 1997, no educational programs were established, barring any interested RDH (save the original 21 HMPP participants) from obtaining licensure. In 2002, West Los Angeles College (WLAC) established an RDHAP program, graduating the first class of 17 students in August 2003. The University of the Pacific is currently working with the California Dental Hygienists’ Association (CDHA) to establish a distance-learning RDHAP program, which should be online in 2004. A second factor limiting the success of RDHAPs comes from the requirement that all patients receive a prescription from a dentist or physician for services performed by an RDHAP. For numerous reasons (including liability issues, lack of knowledge of the services provided by an RDHAP, and competition for patients), many dentists and physicians are currently unwilling to write these prescriptions.

The CDHA is working to eliminate the prescription requirement through legislation in the hope this will enable more RDHAPs to practice. A final limiting factor is that not all dental plans allow direct reimbursement for services provided by dental hygienists. Although some insurance plans (including Delta Dental and Denti-Cal) have begun to accommodate RDHAP within their billing system, there are still many that do not. It is too early to estimate the impact of RDHAPs on access to oral health care in underserved areas. However, this strategy shows potential for significant growth in future years.

Assuming that West Los Angeles College continues to graduate 17 RDHAPs per year, and that each graduate practices full time and sees an average of eight patients per day<sup>2</sup>, this program alone could lead to an increase of 34,000 RDHAP patient visits per year.

### *Scope of Practice*

Since AB 560 was enacted in 1997, several additional bills have served to expand or clarify the scope of practice for dental auxiliaries. SB 1589 specifies that RDHAPs may practice in safety net organizations and public health entities such as public hospitals and tribal clinics. SB 2022 outlined the scope of practice for RDHs in California, and included provisions for RDHs to provide preventive services without supervision from a dentist in any public health program created or administered by a federal, state, county, or local

government entity. SB 1955 established intent to pursue creation of a Dental Hygiene Board that would be independent from the Dental Board of California. Finally, AB 539 (not passed this session) would allow third and fourth year dental students to be licensed as registered dental hygienists after completing a program in dental hygiene and taking national and state dental hygiene exams, but would specify that these temporary RDHs practice only in settings that serve patients insured by Denti-Cal, Healthy Families, and other government programs, or that charge fees on a sliding scale.

The Committee on Dental Auxiliaries (COMDA) has also worked to expand the scope of practice for Registered Dental Assistants (RDAs) and Registered Dental Assistants in Extended Functions (RDAEF), and Registered Dental Hygienists in Extended Function (RDHEF). While these programs are not aimed

#### Requirements for practicing as an RDHAP under AB560

##### Option 1:

- Possess a current California license as a dental hygienist,
- Completion of the prescribed classes through the HMPP #155, and
- Established an independent practice under the HMPP by June 30, 1997.

*Note: RDHAP licensed under this option are not restricted to practice with certain settings.*

##### Option 2:

- Possess a current California license as a dental hygienist,
- Verification of clinical practice as a dental hygienist for at least 2,000 hours during the immediately preceding 36 months,
- Completion of a bachelor's degree or its equivalent from an accredited college or institution of higher education, and
- Completion of a minimum of 150 hours of additional educational requirements including instruction on dental hygiene technique and theory including gerontology and medical emergencies, and business administration and practice management.

*Note: RDHAPs licensed under this option are restricted to practice in settings including schools, residences of the homebound, residential facilities and other institutions, and DHPSAs.*

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<sup>2</sup> Estimate of potential practice capacity by Toni Ebner, RDHAP, Los Banos Clinic, Personal Communication, August 2003.

specifically at increasing the availability of providers in underserved areas, they may help to increase the productivity of dental practices or clinics which locate in those areas further expanding access to care for underserved populations.

#### *Licensure by Credential*

For oral health professionals trained at U.S. accredited schools outside of California, the process of gaining licensure in California was made easier by licensure-by-credential for dentists (AB 1428 enacted in 2001) and dental hygienists (AB 2818 enacted in 2002). Prior to licensure-by-credential, dentists and dental hygienists licensed in another state were forced to take clinical exams in their respective profession before being granted a California license. Under current law, dentists and dental hygienists licensed in another state with at least five years of full-time experience as a clinician or faculty member in their profession may apply for licensure in California without needing to take the exam. Those with at least two (for dentists) or three (for hygienists) years of experience but less than five may apply for licensure-by-credential if the remainder of the five-year requirement is completed at an underserved site, such as a public or not-for-profit dental clinic or hospital.

As of June 2004, 65 dental hygienists' licenses and 704 dental licenses have been approved through licensure-by-credential. Of these out-of-state practitioners, almost all have more than 5 years of experience, as only 8 clinical and 3 faculty licensure-by-credential candidates have been approved under the provision that they complete their five-year term in an underserved setting. Although it is possible that some out-of-state dental hygienists and dentists with more than 5 years of experience are practicing in underserved communities on a voluntary basis, the Dental Board has not tracked practice locations for this category of licensure-by-credential providers. From the limited amount of evidence available, it is anticipated that licensure-by-credential will have a negligible impact on the provision of oral health care in underserved areas in California. The California Dental Board is expected to submit a report to the California legislature on the program in January 2005.

#### *Foreign Dentists*

Strategies to allow foreign-trained dentists to practice in California have been promoted as a partial solution to the shortage of dentists in underserved areas of California. It is assumed that foreign-trained dentists may be more likely to work with minority populations in underserved areas due to their racial/ethnic minority status as well as their cultural and linguistic skills. Evidence from medicine shows that international medical graduates (IMGs) provide a significant amount of care for the poor (Whitcomb

and Miller 1995) however no similar evidence exists for dentistry. In the past, foreign dentists have had two options in order to become licensed in California:

1. Pass the National Board Dental Examinations, Parts I and II  
 Pass the California State Board Restorative Techniques (RT) Part III Exam  
 Pass the California State Board Clinical Part IV Exam
2. Pass the National Board Dental Examinations, Parts I and II  
 Complete 2-year International Dentist (ID) program  
 Pass the California State Board Clinical Part IV Exam

Due to recent legislative action (Table 5), licensure for foreign-trained dentists is currently undergoing several changes. The first route to licensure for foreign-trained dentists involves the completion of a series of exams, both written (Parts I and II) and clinical (Parts III and IV). This test-based route to licensure has been criticized on the grounds that it may not adequately measure the scope and depth of clinical skills necessary to practice dentistry in the United States. Additionally, licensure through this avenue is valid only within California, which may be unattractive to foreign dentists who wish to practice in other states. AB 1116 mandated the sunset of the test-based route at the end of 2003. A second bill currently pending in the legislature (AB 1467) would extend the sunset date of the RT exam until 2009. As of June 2004, the RT exam is no longer an option for those foreign dentists who have not already passed Parts I and II of the National Dental Board Exam. The Dental Board has authority through 2008 to offer the RT, but it will only be administered to those foreign dentists already in the "pipeline" who were qualified to take the RT but hadn't yet as it was offered on a limited basis.

**Table 5: Recent legislation related to licensure for foreign-trained dentists**

<b>Legislation</b>	<b>Current Status</b>
AB 1116 Sunset of restorative techniques (RT) exam for foreign dentists in 2003, established approval process for foreign dental schools	Enacted in 1997
AB 1045 Licensed Dentists from Mexico Pilot Project	Enacted in 2002
AB 1467 Extend sunset of RT exam for foreign dentists to 2009	Pending

In the past, about 250 to 300 foreign dentists have taken the RT exam per year with almost all participants passing the exam within four attempts. The Dental Board does not collect information on the language, ethnicity or country of origin of those taking the RT exam, and does not track the practice locations of foreign-trained dentists who pass the RT and clinical exams. The lack of knowledge of the background and practice patterns of those who take the RT exam make it difficult to estimate the number dentists who obtain licensure through this route who go on to practice in underserved areas of the state. Additionally, it is difficult to project whether the discontinuation of the exam will adversely affect access to dental care for specific populations.

The second route to licensure for foreign-trained dentists is the completion of a two-year International Dentist (ID) program. Since the first ID program began at USC in 1967, each of the other dental schools in the state has followed suit. These programs typically enroll between 10 and 30 students per year, and begin with an intensive classroom-based review of basic science and dental curriculum lasting for one or two months. The remainder of the two-year programs integrate the ID students into the traditional dental school curriculum, emphasizing the clinical skills mastered in the third and fourth year in a traditional dentistry program. ID students graduate with a U.S.-accredited dental degree (DDS or DMD).

The ID route avoids many of the criticisms directed towards the test-based route discussed earlier. These programs work to ensure that participants possess knowledge of procedures and technologies standard to dentistry in the United States. Additionally, ID programs are popular because they allow graduates the flexibility to practice in other states, just as a traditional U.S.-trained dentist would. Finally, these programs are self-sustaining, meaning that the high tuition and the clinical productivity of the ID students assure the continuation of the programs regardless of budget cuts to universities.

In general, the ID programs attract students from all areas of the world, but with a large proportion from India, Southeast Asia, and the Middle East, and markedly fewer from African, Caribbean, or Latin American countries. One factor that may contribute to this uneven distribution of applicants is the high cost of the ID programs: tuition, fees, and living expenses for the two-year programs can run above \$200,000, and applicants to the program must provide proof of ability to pay the full amount at time of admission. As a result, foreign dentists without significant personal or family financial resources are unable to access these programs. The high cost may compel graduates of these programs to seek out high-paying positions in the private sector rather than as safety-net providers. Therefore, ID programs may not be an effective tool for recruiting dental providers to underserved areas of California.

Two other recent pieces of legislation have sought to create alternative routes for foreign-trained dentists to obtain licensure in California. AB 1116 established an alternative route to accreditation by developing a mechanism for the Dental Board of California to grant approval to foreign dental schools. Graduates of foreign dental schools with Dental Board approval would be able to gain licensure in California after sitting for the California State Board Exam. Currently, the Universidad de la Salle in Leon, Guanajuato, Mexico is the only university granted provisional approval. To date, no other schools have applied, possibly due to the difficulty of meeting the standards of training, equipment, and sterilization required for approval by the Dental Board of California.

AB 1045 sought to address the severe shortage of dentists in areas of Southern California with high Latino populations by establishing a pilot program for dentists from Mexico and the Caribbean. The pilot would allow up to 30 dentists who are graduates from the National Autonomous University of Mexico School of Faculty Dentistry (Facultad de Odontologia) and licensed in Mexico to practice at non-profit clinics in underserved areas of California for a three-year period. Although the bill was passed in 2002, several factors have restricted implementation. First, Dental Board officials have been unable to reach an agreement with the dental school in Mexico regarding their role in selecting and training the participating dentists. Second, after completing dental school and obtaining licensure in Mexico, the participating dentists would have to complete extensive training in dental procedures, health and safety regulations, and business practices taught by an instructor affiliated with a California dental school. Currently, none of the five California dental schools have applied for funding to develop a training program for Mexican and Caribbean dentists under AB 1045. Finally, AB 1045 mandates the discontinuation of the program and the expiration of the participants' non-renewable permits after three years, despite the extensive time and effort that would be invested in developing this program and training participants. This means that, at best, the pilot project would provide a short-term increase in access to care for Spanish-speaking populations. Currently, there appears to be little hope for the implementation of AB 1045 before the sunset date in 2006.

Finally, the recently established Welcome Back Centers offer a variety of educational and counseling services to help internationally trained health workers assess their professional career options within California. So far these centers have worked with over 400 dentists in providing services such as the development of career path plans, referrals to other agencies, and development of courses in areas such as English for Health Professionals. Over 60% of those served by the Welcome Back Centers are from Spanish-speaking countries, and all clients must be currently residing in California. Identified barriers among the clients served by the Welcome Back Centers include a lack of English language skills, financial constraints, a lack of time for additional training or obtaining information, difficulty in transferring educational credits, and a limited knowledge of the U.S. healthcare system.

In contrast to International Dentist programs, which consist primarily of dentists who may be younger, receive financial support from family members, and enter the U.S. on a student visa, the typical Welcome Back Center client has already immigrated to the United States, has fewer financial resources, and is currently working outside of his or her field. For this latter population of foreign-trained dentists, few are able to afford the costly International Dentist programs, and may instead attempt to pass the RT exam.

Additionally, many of these immigrant dentists are encouraged to explore other career options within the field of oral health care, such as dental hygiene, dental assisting, and careers in research or advocacy.

In summary, little empirical evidence exists to judge whether foreign-trained dentists differ from those trained in the United States in their tendency to work in underserved areas. However, given the structure of the licensure system in California and the lack of incentives for the current population of foreign-trained providers to practice in high-need areas, it is quite likely that foreign-trained dentists currently have a minimal impact on the provision of oral health care in underserved areas of the state. The only exception may come from the Welcome Back Centers, which work with a high number of dentists from Latin America who may have an interest in working with Spanish-speaking populations. However, given the fact that this program is relatively new, and the process for obtaining licensure can take several years, it is difficult to determine whether even this strategy will result in an increased number of Spanish-speaking oral health care providers.

#### Dental Education Strategies

Dental education strategies encompass a variety of efforts to expose students to issues related to disparities in oral health care and provide opportunities for students to observe and work in non-profit and community-based settings in order to sensitize them to working with underserved populations.

#### *Pipeline Programs*

Each of the five California dental schools has received new funding for programs for dental student recruitment, curriculum reform, and building partnerships with community clinics in underserved areas. Beginning in 2002, UCSF received a grant from the Robert Wood Johnson Foundation (RWJF) as part of the *Pipeline Profession and Practice: Community-Based Education* program. Over the course of the 5-year \$1.3 million dollar grant, UCSF will expand the number of off-site community clinics used for student rotations from 5 to 13, and will increase the amount of time students spend in community clinic rotations from 44 to 60 days. Additionally, the funding will allow UCSF to expand the treatment available for underserved populations at university-affiliated clinics. UCSF will undergo curriculum reform in didactic and clinical instruction for the dental and dental hygiene students, incorporating issues such as cultural competence and topics in dental public health. Finally, the grant will provide funding for recruitment of disadvantaged students through Post-Baccalaureate and Recruitment by Alumni programs.

Recently, RWJF partnered with The California Endowment to provide funding for similar Pipeline programs at each of the other four dental schools in the State. Each of these schools will receive about



\$1.2 million over the course of four years. At least 35% of this funding must be used to recruit underrepresented minority and low-income students (through methods such as post-baccalaureate programs and financial aid). The remainder of the funding will be utilized in three other areas:

- development of community-based education and service experience for students,
- implementation of curriculum reform, and
- collaboration with a coalition of community groups, State and local dental associations, and public health organizations to address disparities in oral health.

It is too early for any assessment of their success, but based on the stated goals of the Pipeline grants, the programs have the potential to significantly influence the recruitment, training, and clinical exposure of dental students in California. First, each of the schools has funding to support three to five students in a dental Post-Baccalaureate program each year for the next several years, resulting in a much higher likelihood of admission for a total of about 70 disadvantaged students over the course of the Pipeline program. Additionally, increased financial aid for underrepresented minority and other disadvantaged students may result in an increase in enrollment for those who could otherwise not afford dental school. Finally, students exposed to the needs of underserved populations, and who have opportunities to work in community clinics may be more likely to choose to work in an underserved area.

### *Residency Programs*

Almost all of the dental schools in California offer programs in General Practice Residency (GPR), Advanced Education in General Dentistry (AEGD), or both. Additionally, some sites, including public, private, military, and Veteran's Administration hospitals offer residency programs, as outlined in Table 6.

GPR and AEGD programs provide opportunities for residents to improve their skills in many areas of dentistry and gain experience in addressing a variety of dental needs. GPR programs require sponsorship by a hospital while AEGD programs can be sponsored by a number of organizations. These programs have common goals as defined by the Commission on Dental Accreditation that include planning and providing multidisciplinary oral health care for a wide variety of patients including patients with special needs and understanding the oral health needs of communities and engaging in community service (Commission on Dental Accreditation 2002; Commission on Dental Accreditation 2002).

Although increasing access to oral health care for underserved populations is not the primary goal of these programs, the residents and the clinics and hospitals in which they work often serve as safety net providers in underserved areas, including the uninsured, Medi-Cal recipients, and disabled persons. A review of graduates of Bureau of the Health Professions general practice of dentistry programs showed

they are five times more likely to practice in underserved communities than average graduates (Advisory Committee on Training in Primary Care Medicine and Dentistry 2001). Residents in AEGD and GPR programs are providing a significant number of patient visits for underserved populations, estimated at somewhere around 800 visits per resident per year, on average. Overall, this number translates to 59,160 visits for 17,927 underserved patients per year across all of the programs.

**Table 6: Advanced General Dentistry Residency Programs in California**

<b>Dental School Affiliated residencies</b>	<b>Type of Residency</b>	<b>Number of Residents</b>	<b>Est. % underserved patients</b>	<b>Est. underserved visits per year</b>
UCLA	AEGD	7	5%	280
UCSF (discontinued)	AEGD	8	80%	5120
UOP	AEGD	16	90%	11520
USC	AEGD	12	95%	9120
UCLA	GPR	6	70%	3360
UCSF (will expand to 6 next year)	GPR	2	90%	1440
USC	GPR	4	95%	3040
<b>Other Residencies</b>				
UCLA (Venice Clinic)	GPR	5	100%	4000
University Medical Center (Fresno)	GPR	8	90%	5760
MLK Jr/Drew Medical Center (Los Angeles)	GPR	6	100%	4800
UCLA/Venice Dental Clinic (Los Angeles)	GPR	5	100%	4000
Rancho Los Amigos Medical Center (Downey)	GPR	5	100%	4000
Cedars Sinai Medical Center (Los Angeles)	GPR	4	85%	2720
<i>Total</i>		88		59,160
<b>Military/Veteran Residencies</b>				
1st Dental Battalion/Camp Pendleton	AEGD	5	n/a	n/a
60th Medical Group/Travis AFB	AEGD	4	n/a	n/a
Naval Dental Center/San Diego	AEGD	10	n/a	n/a
Naval Hospital/Camp Pendleton	GPR	4	n/a	n/a
Naval Medical Center/San Diego	GPR	6	n/a	n/a
Veterans Affairs Long Beach Healthcare Systems	GPR	4	n/a	n/a
Veterans Affairs Medical Center/Loma Linda	GPR	5	n/a	n/a
Veterans Affairs Medical Center/Mare Island	GPR	6	n/a	n/a
Veterans Affairs Medical Center/Palo Alto	GPR	6	n/a	n/a
Veterans Affairs Medical Center/San Diego	GPR	3	n/a	n/a
Veterans Affairs Medical Center/San Francisco	GPR	4	n/a	n/a
Veterans Affairs Medical Center/Sepulveda	GPR	10	n/a	n/a
Veterans Affairs Medical Center/West LA	GPR	10	n/a	n/a
<i>Total</i>		77		

Many of these residency programs are supported by Graduate Medical Education (GME) funds that have been under fire at the federal level making the future of these programs somewhat uncertain. The expense of operating residency programs, shortages of dental faculty members, and the limited space at many dental school and hospital-based clinics indicates these residency programs are not likely to expand in the near future.

#### *Mandatory Post-Graduate Year of Training*

One proposal within California, as well as other states, is the expansion of post-graduate residency education (PGY-1) positions. This proposal takes many forms. The new system in New York gives dental school graduates two options to obtain licensure: complete a residency program accredited by the Commission on Dental Accreditation of at least one-year in length or take the State clinical licensing exam. Another option is for all graduates to complete both a residency and a clinical exam in order to be eligible for licensure. However, some argue that the clinical licensing exam should be discontinued altogether.

Strong arguments have been made both for and against a residency requirement for all dental graduates. Proponents cite the importance of providing an opportunity for all dentists to solidify their clinical skills in a supervised setting. Additionally, given the limited capacity of current residency programs, the most likely source of additional residency sites would be at community clinics. Placement in community clinics would expose new dentists to working in underserved areas and allow the clinics to recruit residents for more permanent positions, encouraging new practitioners to consider working with underserved populations as a long-term career choice. Finally, placing residents at community clinics would create an immediate increase in the capacity of these sites, although new placements would require a one-time increase in clinic capacity (new operatories and related equipment). If a residency were to become mandatory for all dental graduates in California, this would potentially yield approximately 281,600 additional patient visits for 85,333 underserved patients per year.

Opponents of the year of residency point to the difficulties that would be encountered in expanding the residency system in California, as well as issues of quality control. First, some doubt that community clinics have sufficient financial or personnel resources to meet this increase in demand for residency spots, particularly since GME for dentistry is restricted. There is little data on how much this might cost, but the costs would be considerable. Others point to the benefits of the current clinical exam, which provides a standardized measure of competence among licensed dentists in the state and raise concerns that a residency, if offered in lieu of a licensure exam, might be a less consistent and objective method of

evaluating candidates for licensure. On the other hand many argue that the current clinical licensing examination is not reliable or valid and does not achieve its stated goal of protecting the public. They argue that the additional experience provided in a residency education program along with the close mentoring and observation that takes place in these programs provides a much better system for determining a dentist’s readiness for independent practice.

In summary, the residency programs in general dentistry currently provide a significant amount of care for underserved populations in the state, and expanding these programs, while extremely costly, has the potential for increasing access for underserved populations seven-fold.

Applicant Pool Strategies

Applicant pool strategies in California dental schools are limited, although there is a growing recognition of the importance of conducting outreach with underrepresented minority and disadvantaged students. Poor communities of color are among the most severely impacted by the maldistribution of dentists. Rates of dental caries are much higher among African Americans, Latinos, and Native Americans when compared to whites, and these populations are much more likely to lack access to regular dental care (USDHHS 2000).

Recruiting and training underrepresented minority students as dentists is widely recognized as an effective strategy in increasing access to dental care within minority communities and improving the availability of culturally competent care. Underrepresented minority dentists are more likely to establish practices in underserved communities (Mertz and Grumbach 2001; Weaver, Haden et al. 2002). Additionally, patients may prefer to receive dental care from a dentist who shares their cultural or linguistic background (ADA 1996). Currently, there is a significant disconnect between the race/ethnicity of dental students, and that of the California population (Table 7).

**Table 7: Race/Ethnicity of California population and dental students(Weaver, Haden et al. 2002; State of California 2003)**

	American Indian / Alaska Native	Asian / Pacific Islander	Black / African American	White	Hispanic / Latino
Percent of California Population	1%	11%	6%	47%	32%
Percent of California dental students	< 1%	43%	1%	42%	6%

Despite the evidence of the effectiveness of recruiting and training underrepresented minority students in dentistry, public dental schools in California are currently unable to utilize affirmative action in their recruitment or admissions process, due to Proposition 209, which eliminated the use of affirmative action programs in California in 1996. In 1995 the University of California Board of Regents decided to end selective admissions for racial/ethnic minorities. This decision was rescinded in 2001 however its affects are still being felt within the university system.

As a result of this limitation, many educational outreach programs in California instead focus on recruiting “disadvantaged” students. Programs targeted towards disadvantaged students are likely to include some underrepresented minorities, but large numbers of white and Asian students also qualify under these definitions. Students in California can qualify as disadvantaged if they have experienced significant economic or educational barriers in their lives. More specifically, to be considered disadvantaged, the student must:

- Come from a family with an annual income below a level based on low-income thresholds according to family size, published by the U.S. Bureau of the Census, and adjusted annually for changes in the Consumer Price Index, OR
- Come from an environment that has inhibited the individual from obtaining the knowledge, skills, and abilities to enroll in and graduate from a health professions school, or from a program providing education or training in an allied health profession.

Programs focused on disadvantaged students have the advantage of providing assistance to students from recently-immigrated populations, rural areas, and other underserved communities. Disadvantaged students often have a strong commitment to underserved populations and express an interest in returning to practice in the ethnic or geographic community from which they came. However, programs for disadvantaged students have difficulty attracting significant numbers of underrepresented minority students. As a result, these programs may have a less than desired impact on access to care for African American, Latino, and Native American populations.

### *High School Recruitment and Mentoring*

Many programs seek to interest students in dental careers through outreach efforts, typically during high school and college. One example of a large-scale recruitment program is the Health Careers Opportunity Program (HCOP), funded by HRSA. Within California, six universities are currently HCOP grantees. The majority of the grantees are medical schools that work to prepare students for careers in medicine; however some are less specialized and focus more generally on preparation for health-related careers, including those in oral health. One California grantee, the UCSF School of Dentistry, is focused specifically on preparing disadvantaged students for dental careers.

At UCSF, the HCOP grant is used to fund several programs for high school and college students interested in dental careers. Activities offered to students through these programs include:

- Science enrichment courses and tutoring,
- Mentoring from dental professionals,
- Assistance with preparation of college applications,
- Information on financial aid, and
- Participation in residential summer programs.

In addition to receiving academic preparation and career guidance, students participating in structured recruitment programs may have the opportunity to develop a sense of camaraderie and support with other motivated students from disadvantaged backgrounds.

Each of the outreach programs focuses on a specific age group, and provides a different set of activities appropriate to the educational trajectory of the students. For example, high school juniors participate mostly in science enrichment courses and receive tutoring, while high school seniors receive tutoring, SAT preparation, and assistance with college applications. In total, about 20 high school students and 30 college students participate in the UCSF programs each year.

Other dental schools in California utilize more informal methods of student recruitment. These outreach efforts may involve several different strategies, including faculty and administrator visits to high schools and universities to meet with interested students, conducting tours and information sessions at the dental school, giving talks to students about careers in dentistry, mentoring, and creating other personal connections with potential students.

Evaluating the effectiveness of high school and college outreach methods is difficult. There is potential for self-selection of students into the program who may be highly motivated regardless of their participation. For these students, it is difficult to measure the contributions of a program in helping them gain admission to a dental school. Additionally, programs focused on helping students several years before they apply for professional school lose many students to follow-up. Finally, the significant time-lapse between the intervention and the outcome in many of these programs means that there may be many intervening factors influencing career choices of participants. The current programs in California are relatively new so even if the methodological barriers to evaluating their effectiveness were overcome, it is too early to see any results.

### *Post-Baccalaureate Programs*

Post-Baccalaureate programs are designed to provide academic and social support for disadvantaged students who are interested in applying to dental school. At UCSF, for example, students must have been previously denied admission to dental school in order to apply for the program. Once in the programs, students generally take basic and advanced science classes at a university, receive Dental Aptitude Test (DAT)-preparation tutoring, receive help in preparing their applications, and may participate in other activities, such as community service or observing in a dental clinic.

The UCSF Post-Baccalaureate program has resulted in statistically significant increases in DAT test scores. More importantly, despite their previous rejection from dental school, all 60 past participants have been admitted to at least one dental school after participation in the program.

Judging from the success of the Post-Baccalaureate program at UCSF, which began in 1998, it is anticipated that this strategy will have a strong impact on the number of disadvantaged students attending dental school in California when implemented by all five dental schools. Although the Post-Baccalaureate programs at Loma Linda, UCLA, University of the Pacific, and USC are still in their beginning stages, it is anticipated that these programs in combination with the UCSF program will result in an increase of at least 20 disadvantaged students from California gaining admission to dental school per year.

### **Discussion**

The programs discussed in this report represent the majority of efforts across the state aimed specifically at recruiting oral health care providers to underserved areas. With anywhere from 3 million to 9 million Californians lacking access to care or having untreated dental disease, these efforts are hardly enough. As well, “underserved” populations vary greatly in their need and appropriate response. However, the programs are impacting the communities in which their participants serve.

### *Immediate Annual Impact*

Loan repayment and scholarship programs combined have 51 providers working in underserved areas, providing approximately 130,050 patient visits annually, at an average annual cost of \$1.33 million. This amounts to a subsidy of approximately \$25,000 per provider and \$10 per patient visit enabled by those providers. The future of these programs will depend on the sustainability of the public and private dollars that go to support them. One program is ending (Delta Dental Loan Repayment), representing a loss of 4 providers annually, however the CDAF Loan Reduction program has the potential to expand to up to 30

providers, and the Dental Board of California’s program will also add 30 additional providers on a one-time basis. These increases would more than double the current field strength, potentially providing an additional 153,000 patient visits for 46,364 patients, and even more for every year after the service obligation that the provider chooses to stay in the community.

**Table 8: Summary of Current and Projected Impact of all Programs**

	<b>Program Participants</b>	<b>Annual Underserved Patient Visits</b>	<b>Annual Underserved Persons Served</b>	<b>Percent of underserved (based on 3 million estimate)</b>
<b>Current Programs with Data to Estimate</b>				
Loan and Scholarship	51	130,050	39,409	1.3%
RDHAP (pilot project participants)	21	0	0	0.0%
Foreign Dentists (Bench Exam)	300	unknown	unknown	unknown
Foreign Dentists (Mexico Pilot)	n/a	n/a	n/a	n/a
ID Program Dentists	94	unknown	unknown	unknown
Welcome Back Center	400	unknown	unknown	unknown
Pipeline Program	n/a	n/a	n/a	n/a
Advanced General Dentistry Residency (Non-Military)	88	59,160	17,927	0.6%
Advanced General Dentistry Residency (Military)	73	n/a	n/a	n/a
Post Bac Programs	5	n/a	n/a	n/a
Dental School Outreach	50	n/a	n/a	n/a
<i>Subtotal</i>	<i>1,082</i>	<i>189,210</i>	<i>57,336</i>	<i>1.9%</i>
<b>Potential Increase in Programs with Data to Estimate</b>				
Loan and Scholarship	60	153,000	46,364	1.5%
RDHAP	17	34,000	10,303	0.3%
Foreign Dentists (Bench Exam)	n/a	n/a	na	n/a
Foreign Dentists (Mexico Pilot)	30	76,500	23,182	0.8%
ID Program Dentists	n/a	n/a	n/a	n/a
Welcome Back Center	n/a	n/a	n/a	n/a
Pipeline Program	635	40,640	12,315	0.4%
Residency Programs (PGY1)	352	281,600	85,333	2.8%
Post Bac Programs	16	n/a	n/a	n/a
Dental School Outreach	unknown	unknown	unknown	unknown
<i>Subtotal</i>	<i>1,110</i>	<i>585,740</i>	<i>177,497</i>	<i>5.9%</i>
<b>Total</b>	<b>2,192</b>	<b>774,950</b>	<b>234,833</b>	<b>7.8%</b>

Changes in licensure processes and scopes of practice for dental hygienists have not yet shown any impact on access to care in underserved areas, although the new RDHAP program just graduated its first class of 17, with the potential to provide an additional 34,000 patient visits annually. If the online version of this program is launched, this could double. The impact of licensure by credential and changes in



supervision rules for various practice settings have not been measured. It is unclear whether either of these strategies will impact access to care as these providers were providing care as RDHs before they were qualified to be RDHAPs, so while there is a gain made in serving underserved populations there is probably not a net gain in care provision from this strategy.

Foreign dentists do enter this state and gain licensure; however, there are no data to show that these providers once licensed are more likely to practice in underserved areas or treat underserved patients. The Mexico pilot project is unlikely to ever come to fruition, and accreditation of foreign dental schools is unlikely. The Welcome Back centers have the most potential to help foreign trained providers get back into the oral health professions and practice in underserved areas, yet there are no data on any of these strategies that indicates foreign dental graduates are serving as safety net providers.

The Pipeline to Professions program has not been fully implemented yet, although if the schools meet their stated goals it has the potential to provide an additional 40,640 patient visits for 12,315 patients in community clinic rotations per year once implemented fully across the 5 dental schools. In addition potentially 70 disadvantaged students may gain access to dental school over the course of the program. Whether these students will go on to provide care to underserved communities is unknown.

Dentists in existing California residency programs currently provide 59,160 patient visits to 17,927 underserved patients. If a PGY1 requirement was implemented this could result in up to an additional 281,600 patient visits for 85,333 underserved patients, the greatest potential increase of any strategy examined.

We estimate the combined impact of current programs in the range of 189,210 patient visits annually. This translates into approximately 57,336 patients, meeting about 2% of our minimum estimate of need. If all potential programmatic increases predicted were to take place, the number of patient visits provided could increase to a total of 774,950 patient visits annually, meeting about 8% of the minimum estimate of need. Many barriers exist to these programs being implemented, however, and with the current fiscal crisis in the state and in the public universities, it is unlikely that all of these increases will be realized. However, if retention in underserved communities is good as providers cycle through these programs the combined impact should multiply over time.

### *Long-Term Impact*

It is important to note that the loan repayment, scholarship and RHDAP programs will have an increasing impact over time as cohorts of graduates continue to practice in underserved areas. The ongoing, funded loan repayment programs have a current field staff of 47 participants providing 119,850 patient visits to 36,318 underserved patients. As each cohort graduates an estimated 50% will stay in an underserved area, meaning that each class would continue to provide about 15,300 patient visits a year (See Table 9). After 10 years the current and past participants of these programs would be providing services to almost 80,000 patients meeting 2.6% of community need, about the same as the PGY-1 proposal. While the PGY-1 proposal would have the greatest immediate impact, and has potential for longer term impact if residents stay on at their training sites, these two programs are likely to realistically have the biggest impact. As long as these programs sustain or increase current participant levels they will greatly impact access to care for underserved individuals.

**Table 9: Summary of Long Term Impact of Programs**

	Stable Program Participants	Annual Underserved Patient Visits	Annual Underserved Persons Served		Percent of underserved (based on 3 million estimate)
<b>Cohort Affect on Access to Care</b>					
Annual Current Loan/Scholar Programs	47	119,850	36,318	36,318	1.2%
Program Graduates Service to Underserved	Graduates Retained	Additional Patient Visits Annually	Additional Underserved Persons Served Annually	Total Underserved Persons Served Annually	
Year 1	6	15,300	4,636	40,955	1.4%
Year 5	28	71,400	21,636	57,955	1.9%
Year 10	55	140,250	42,500	78,818	2.6%
<b>RDHAP (WLAC Graduates Only)</b>					
Year 1	17	34000	10,303		0.3%
Year 5	85	170000	51,515		1.7%
Year 10	170	340000	103,030		3.4%

### *Articulation and Collaboration*

While the impact of individual programs and strategies is important, in the pipeline model used here, it is important to examine the articulation between the programs. Hypothetically, these strategies work in tandem to identify potential students, assist them in admissions and training, and support them in practice in underserved communities. Neither programs within a strategy nor across strategies were found to be

systematically working together to help potential, existing nor graduated students move successfully into practice in an underserved area. The exception is where one institution (such as UCSF) runs programs within all three strategies, and has leadership involved across program areas. While it has been suggested that economies of scale would be better achieved if similar programs (such as the three loan repayment programs run by the State) merged, the programs insist that they fill different needs by allowing different selection and placement criteria, with some being more flexible than others. Data on overhead costs and operating budgets were not available for all programs, so comparisons of this nature are not possible.

## **Conclusion**

The programs evaluated in this report were not developed to solve all of California's oral health workforce needs, yet they clearly have a strong impact in the underserved communities where they place providers. For many communities, these providers are the sole source of care. However, the impact of current program efforts falls far short of addressing the oral health care needs of Californians. So great is the gulf between what these efforts are able to produce and the growing epidemic in dental health, that a new model of addressing this public health crisis needs to be considered. Such a strategy should be an amalgam of educational, loan repayment, practice reform and finance of care. One set of policies described below, attempts to make the existing system work, the other acknowledges the enormity of the task and seeks to identify fundamentally new approaches to education, delivery and finance of dental care.

Policies to improve the supply of oral health care providers in underserved areas can intervene at three major points in the educational and practice environment:

- Practice environment strategies attempt to make practice in shortage areas more attractive;
- Education strategies address the educational experiences of dentists and hygienists; and
- Applicant pool strategies target the types of students who enter dental education.

Interventions within each of these strategies are necessary to form a continuum; the longer-term strategies affecting the applicant pool and the shorter-term strategies affecting practicing oral health care providers. The following recommendations focus on actions that the California Legislature and State agencies can take to increase the number of dentists, dental hygienists and dental assistants in underserved areas. They also offer a guide to setting priorities for funding and program development by other government agencies, educational institutions, foundations, professional associations, and other entities.

## Policy Recommendations

### Expansion of Existing Programs

1. *Applicant pool strategies* should be expanded with particular attention to increasing the cultural diversity of the dental workforce. In a state such as California, having an ethnically diverse and culturally competent workforce is imperative to the health of the public. Admissions policies of all California dental professions schools should be sufficiently flexible to take into consideration the various factors that contribute to a dental professional's ability to serve the public effectively.
2. *Dental education strategies* should be expanded by implementing a PGY-1 residency as a requirement or alternate path for licensure in California. New residency programs should be located in underserved areas and serve underserved populations. California policymakers should work with federal policymakers to ensure that GME funding remains available for dental education.
3. *Practice environment strategies* should be expanded through additional funding for existing loan repayment and scholarship programs. These programs have been very successful in placing oral health professionals in underserved areas and are an inexpensive option for expanding access, subsidizing \$10 per visit, even less when compounded over the total time a provider stays on after the loan repayment is finished.

### New Programs Considerations

4. *Auxiliary oral health care providers* are invaluable members of the dental care team, yet are virtually ignored by most of the current programs and policies focused on the supply of dentists. In addition, oral health care professionals oriented in public health are lacking. Policy makers should take a close look at the mix of oral health care professionals, scope of practices and supervision requirements for opportunities to further increase the capacity of providers who work in underserved areas.
5. Programs should be developed to *increase the supply of dental auxiliaries in underserved areas* across the continuum of applicant pool, education and practice environment strategies.
6. *Expanding the scope of practice* for dental auxiliaries (RDHs, RDHAPs, RDHEFs, RDAs and RDAEFs) would greatly increase the capacity of existing providers to provide both preventive and restorative care in underserved areas. Education programs and licensure processes need to accommodate the advancement of practice of all levels of dental professionals.
7. *Reducing supervision requirements* for dental auxiliaries would increase the ability of these providers to work in communities and organizations that do not have the resources for a full-time

dentist. Continuing education at local community colleges combined with creative certification could ensure quality of care.

8. There is no *one source of information on areas considered underserved* or employment opportunities in those areas for oral health care professionals. State agencies should work with dental professional associations and community clinics to develop a clearinghouse of job openings for oral health providers in underserved areas as well as a listing of the programs that are available to help interested providers.
9. *Funding and reimbursement mechanisms* should be tailored to enable dental care provision for underserved populations and encourage innovation in this area. The traditional fee for service procedure-based reimbursement schemes cannot accommodate innovative models of care. Dental plans and Medi-Cal should encourage and fund new models of care.

#### Data Collection and Program Evaluation

10. *Data on the participants and impact of many of these programs* is lacking. Programs need to collect better data on numbers and characteristics of providers participating, retention rates, and impact on access to care in underserved communities in order to better track program outcomes.

In particular there is no information on the practice locations or patient populations of:

- Foreign dental graduates passing the bench exam for CA licensure
- Graduates from International Dentists Programs
- Dental professionals working with Welcome Back Centers
- Registered Dental Hygienists in Alternative Practice (RDHAPs)
- Participants of the RWJ “Pipeline to Professions” Program
- Licensure by credential applicants
- Providers finishing an AEGD or GPR residency in an underserved area
- Graduates who participated in a high school recruitment, mentoring process, or post-baccalaureate program

#### Develop New Models of Dental Care

The state should consider a new pathway to training in preventive, general and pediatric dentistry. Most of the crisis in dental disease in a specific part of the population under 19 and many of the cases require sophisticated dental procedures.

11. The state should consider developing a hybrid DDS/MS program of five years of training leading to both the DDS and a Masters in Pediatric Dentistry. The majority of the clinical training for this program would take place in dedicated community health centers or community dental health centers, which would not only serve as training sites, but expand the service availability to underserved populations. They would also be places in which new team arrangements among the dental health professionals could be demonstrated and where dental health delivery could be

better integrated into general health and public health efforts. Students enrolling in this special track would receive free dental education, but would be obligated for five years of service through the public dental clinics network. The program would not be a new dental school, but expand off of the existing programs at UCSF and UCLA.

- Create five new education-service centers that could provide new practice models that would be consistent with the educational program described above. The new dental education and service centers could also be locations for collection of data and ongoing research.
- Use the integrated dental education and service centers to model small-scale sustainable practices that would be financially viable in rural settings. This will necessitate a different, more collaborative relationship between dentists, hygienists and other auxiliary staff.
- Use the integrated dental education and service centers to pilot the creation of a cadre of new oral health professionals (with expanded function and independent practice) trained not only in dental care but in public health. These new providers would work in public health settings (schools, community centers, local public health departments) and focus solely on the prevention of dental disease in children. Move away from the current dental practice model to a model more like public health nursing with independent dental “nurses” managing the oral health of the communities in which they work.

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## Abbreviations Used in this Report

AB	Assembly Bill (California legislature)
AECD	Advanced Education in General Dentistry
CDA	California Dental Association
CDHA	California Dental Hygienists' Association
COMDA	Committee on Dental Auxiliaries
CSLRP	California State Loan Repayment Program
DBC	Dental Board of California
DHPSA	Dental Health Professional Shortage Area
FQHC	Federally Qualified Health Centers
GPR	General Practice Residency
HPEF	Health Professionals Education Foundation
IHS	Indian Health Service
LLU	Loma Linda University
MUA	Medically Underserved Areas
NHSC	National Health Service Corps
OSHPD	Office of Statewide Health Planning and Development
RDA	Registered Dental Assistant
RDAEF	Registered Dental Assistant in Expanded Function
RDH	Registered Dental Hygienist
RDHAP	Registered Dental Hygienist in Alternative Practice
RDHEF	Registered Dental Hygienist in Expanded Function
RHC	Rural Health Center
RT	Restorative Techniques
RWJF	Robert Wood Johnson Foundation
SB	Senate Bill (California legislature)
UCLA	University of California, Los Angeles
UCSF	University of California, San Francisco
UOP	University of the Pacific
USC	University of Southern California
WLAC	West Los Angeles College

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## **APPENDIX 1: PROGRAM DESCRIPTIONS**

### **National Health Service Corps (NHSC) Loan Repayment**

Administering Organization: U.S. Department of Health and Human Services (DHHS)

Contact: 800-221-9393

Website: <http://nhsc.bhpr.hrsa.gov/>

#### **Overview:**

NHSC works to improve the health of the nation's underserved populations by recruiting committed professionals to work in health professional shortage areas. Ultimately, the NHSC seeks to retain these professionals in underserved areas, so that their impact on health access within these communities lasts beyond their participation in NHSC.

#### **Eligibility:**

General practice dentists (DDS or DMD) and dental hygienists (RDH) are eligible. Applicants must first find a position at a site found on the NHSC opportunities list at: <http://nhsc.bhpr.hrsa.gov/jobs/>.

Applicants then apply for loan repayment funding.

#### **Program Details:**

Participants must commit to two years of full-time service at an approved NHSC site, and can receive up to \$25,000 in loan repayment per year from NHSC for each of these two years. Renewals are available for additional years.

### **Indian Health Service (IHS) Loan Repayment**

Administering Organization: IHS

Contact: Dr. Timothy Lozon, 800-447-3368 or 301-443-0029 (direct)

Website: <http://www.ihs.gov/MedicalPrograms/Dental/index.cfm>

#### **Overview:**

The IHS loan repayment program seeks to recruit and retain highly qualified healthcare providers to work in IHS and tribal facilities.

#### **Eligibility:**

General practice dentists (DDS or DMD) and dental hygienists (RDH) are eligible. Applicants must find a position at an eligible IHS or tribal clinic. Typically, applicants have already begun working at a site, or have an agreement to begin after IHS funding is established.

#### **Program Details:**

Participants must commit to two years of full-time service at an approved site, and can receive up to \$20,000 in loan repayment per year from IHS for each of these two years. Renewals are available for additional years, at up to \$20,000 per year. IHS has a priority site listing for dental placements---the priority list is utilized in each round to fund applicants on a first-come, first-served basis until all money is exhausted through the monthly award cycles.

### **California State Loan Repayment Program (C-SLRP)**

Administering Organization: Office of Statewide Health Planning and Development (OSHPD)

Contact: Karen Munsterman, 916-654-2102

Website: <http://www.oshpd.cahwnet.gov/pcrcd/stateloan/index.htm>

#### **Overview:**

C-SLRP places primary healthcare professionals in Health Professional Shortage Areas (HPSAs) across California in order to provide equitable access to healthcare across the state.

#### **Eligibility:**

General practice dentists (DDS or DMD) are eligible. Applicants must find a position at a dental HPSA site, or work with a site to obtain DHPSA designation. Applicants must have begun working at a site at the time of application.

#### **Program Details:**

Participants must commit to two years of full-time service at an approved site, and can receive up to \$25,000 in loan repayment for each year. Renewals are available for additional years, at up to \$35,000 per year in loan repayment. Half of the yearly loan repayment is paid by C-SLRP, while remaining half must be paid by the employer. For example, in the first year of service, participants can receive \$12,500 from C-SLRP and \$12,500 from the clinic where they work. Beginning in 2003, applications to C-SLRP will be reviewed once a year on a competitive basis.

### **Health Professions Education Foundation (HPEF) Loan Repayment Program**

Administering Organization: HPEF

Contact: Sondra Jacobs, 800-773-1669

Website: <http://www.healthprofessions.ca.gov>

#### **Overview:**

HPEF works to increase the supply of committed healthcare providers practicing in rural and urban underserved areas of California.

#### **Eligibility:**

General practice dentists (DDS or DMD) and dental hygienists (RDH) are eligible. Applicants must find a position at an eligible site located in a designated medically underserved area (MUA). Most applicants have already begun working at a site, or have an agreement to begin after HPEF funding is established.

#### **Program Details:**

Participants must commit to two years of full-time service at an approved site, and can receive a total of \$10,000 in loan repayment. After the initial two years, a participant may re-apply for an additional \$10,000 in loan repayment in exchange for a second two-year service obligation. Applicants are selected through a competitive process.

### **National Health Service Corps (NHSC) Scholarship Program**

Administering Organization: U.S. Department of Health and Human Services (DHHS)

Contact: 800-221-9393

Website: <http://nhsc.bhpr.hrsa.gov/>

#### **Overview:**

NHSC works to improve the health of the nation's underserved populations by recruiting committed professionals to work in health professional shortage areas. Ultimately, the NHSC seeks to retain these professionals in underserved areas, so that their impact on health access within these communities lasts beyond their participation in NHSC.

#### **Eligibility:**

Students studying general dentistry or pediatric dentistry at any U.S. accredited dental school are eligible.

#### **Program Details:**

NHSC scholarships include payment of tuition and fees, monthly stipends, and other reasonable expenses associated with education (including books, supplies, and equipment). After training is completed, scholarship recipients choose a practice site from a list of eligible dental HPSAs of greatest need. Each recipient must complete one year of service for each year of support received, with a two-year minimum commitment.

### **Health Professions Education Foundation (HPEF) Scholarship Program**

Administering Organization: HPEF

Contact: Sondra Jacobs, 800-773-1669

Website: <http://www.healthprofessions.ca.gov>

#### **Overview:**

HPEF works to increase the supply of committed healthcare providers practicing in rural and urban underserved areas of California.

#### **Eligibility:**

Students with a demonstrated financial need who are studying general dentistry or dental hygiene in California are eligible.

#### **Program Details:**

HPEF scholarships consist of a one-time \$10,000 payment to be used for tuition and other educational expenses. After training is completed, scholarship recipients must find an approved site located in a medically underserved area (MUA) and must complete two years of service. Scholarship recipients who have already received the \$10,000 scholarship may apply in subsequent years without accruing additional service obligations. Applicants are selected through a competitive process.

### **California Dental Association Foundation (CDAF): Dental Graduate Loan Reduction Program**

Administering Organization: CDA Foundation

Contact: Rolande Tellier, 916-443-3382 x8900

Website: <http://www.cdafoundation.org/>

#### Overview:

The Dental Graduate Loan Reduction Program places dental providers in underserved communities by helping to reduce economic barriers associated with dental student debt, which often prevents recent graduates from practicing in these areas.

#### Eligibility:

General practice dentists (DDS or DMD) are eligible. Applicants must identify a position at an underserved site. Applicants may already be working at a site, or must have an agreement to begin after funding is established.

#### Program Details:

Participants must commit to three years of full-time practice in an underserved area, and will receive up to \$35,000 in loan repayment per year. Applicants are selected through a competitive process.

### **Delta Dental Loan Repayment Program**

Administering Organization: Delta Dental, individual dental schools

Contact: Terry Lafferty, (916) 861-2461

Website: n/a

#### Overview:

The Delta Dental Loan Repayment Program sought to recruit and retain recent dental graduates to work in Denti-Cal underserved counties across California. **This program ended in 2003 due to budget constraints.**

#### Eligibility:

Senior dental students at any California dental schools interested in working in Denti-Cal underserved county.

#### Program Details:

The program awarded \$25,000 to \$35,000 to students at each of the five California dental schools to be used for student loan repayment in exchange for agreeing to work at an approved site in a Denti-Cal underserved county. The funding came from the Denti-Cal Outreach Program, Office of Medi-Cal Dental Branch, Department of Health Services, and the program was administered through Delta Dental.

### **UCSF Osher Scholarship**

Administering Organization: UCSF

Contact: Dr. Charles Alexander, 415-514-2671

Website: <http://dentistry.ucsf.edu>

Overview: The UCSF Osher scholarship assists in reducing the accrual of student debt for individuals with a history of volunteerism and work with underserved communities. Lower student debt will enable recipients to accept positions working in community service after graduation.

Eligibility: Applicants must be current first-year students in UCSF School of Dentistry with a demonstrated interest in working with underserved populations.

Program Details: Students receive \$5,500 per year for the last three years of dental school. Recipients do not have a service obligation.

### **Registered Dental Hygienists in Alternative Practice (RDHAP)**

Administering Organization:

Contact: Committee on Dental Auxiliaries (COMDA), 916-263-2595

West Los Angeles College RDHAP program, 310-287-4238

Website: <http://www.comda.ca.gov/>

Overview:

Through passage of AB 560 in 1997, the California legislature allowed registered dental hygienists with additional training to practice independently in certain settings.

Eligibility:

RDHAPs must have practiced as an RDH for a minimum of three years, must have a bachelor's degree or its equivalent, and must complete 150 hours of additional educational requirements.

Program Details:

West Los Angeles College is the first school to offer an educational program for RDHAPs. Those who are trained as RDHAPs under AB 560 are restricted to practice in specific settings, including schools, dental HPSAs, residential facilities, and residences of the homebound.

**Licensure by credential for dentists**

Administering Organization: Dental Board of California

Contact: Continuing Education Unit 916-263-2300 x 2304 and 2339

Website: <http://www.dbc.ca.gov/>

Overview:

Currently, dentists who attended dental school in another state can apply for licensure by credential, which awards a California license without necessitating the completion of a board exam.

Eligibility:

Dentists who have a DDS or DMD degree from a U.S. accredited dental school outside of California and at least two years of practice (consisting of a minimum of 1000 hours per year) are eligible.

Program Details:

Those with five or more years of experience may apply for an unrestricted California dental license and can practice anywhere in the state. Those with at least two but less than five years of experience may complete the remainder of the five-year requirement through teaching or practicing at approved sites in California.

**Licensure by credential for dental hygienists**

Administering Organization: Committee on Dental Auxiliaries (COMDA)

Contact: 916-263-2595

Website: <http://www.comda.ca.gov/rdhlbc.html>

Overview:

Currently, dental hygienists who attended dental school in another state can apply for licensure by credential, which awards a California license without necessitating the completion of a board exam.

Eligibility:

Registered dental hygienists who received their training and licensure outside of California and at have at least two years of practice (consisting of a minimum of 750 hours per year) are eligible.

Program Details:

Those with five or more years of experience may apply for an unrestricted California dental hygiene license and can practice anywhere in the state. Those with at least two but less than five years of experience may complete the remainder of the five-year requirement through practicing at approved sites in California.

**Licensed Dentists from Mexico Pilot Program (AB 1045)**

Administering Organization: Dental Board of California

Contact: (916) 263-2300

Website: <http://www.dbc.ca.gov/>

**Overview:**

In 2002, the California Assembly passed a bill creating the Licensed Dentists from Mexico Pilot Program, which would allow dentists trained in Mexico and the Caribbean to receive additional training and a temporary license to practice dentistry in underserved areas of California.

**Eligibility:**

Dentists from Mexico or the Caribbean are eligible. Participants would need to receive additional training before beginning to practice in California. The non-renewable temporary licenses would expire after three years, ending the pilot program.

**Program Details:**

This program is not being implemented at present.

**Accreditation of foreign dental schools (AB 1116)**

Administering Organization: Dental Board of California

Contact: (916) 263-2300

Website: <http://www.dbc.ca.gov/>

**Overview:**

In 1997, the California Assembly passed a bill permitting the Dental Board of California to provide accreditation to foreign dental schools that meet certain requirements. Graduates of accredited schools would be able to obtain a California dental license.

**Eligibility:**

Any foreign dental school may apply for accreditation by the Dental Board of California. The Dental Board evaluates schools based on curriculum, faculty qualifications, student attendance, plant and facilities, and other relevant factors.

**Program Details:**

The University of LaSalle in Mexico is the only school with conditional approval from the Dental Board of California. No other schools have applied for accreditation.



### **Welcome Back Center**

Administering Organization: Welcome Back Center  
Contact: Jose Ramon Fernandez-Pena, 415-405-0488  
Website: <http://www.welcomebackcenter.org/>

#### Overview:

The Welcome Back Center works to build a bridge between the pool of internationally trained health workers living in California and the need for linguistically and culturally competent health services in underserved communities.

#### Eligibility:

Dentists trained outside of the United States who are currently residing in California are eligible for assistance.

#### Program Details:

The Welcome Back Center provides orientation, counseling, and support to internationally trained health workers who are seeking employment within their field. Activities may include developing a career plan, obtaining the appropriate professional credentials and licenses for their profession, and examining other career options in related areas.

### **Pipeline, Profession & Practice: Community-Based Dental Education**

Administering Organization: Robert Wood Johnson Foundation, The California Endowment  
Contact: Dr. Howard Bailit, [Bailit@NSO1.UCHC.EDU](mailto:Bailit@NSO1.UCHC.EDU)  
Website: <http://dentalpipeline.columbia.edu>

#### Overview:

The Dental Pipeline program aims to help dental schools recruit more disadvantaged candidates, develop culturally sensitive oral health professionals, and extend high-quality dental services to underserved urban and rural communities.

#### Eligibility:

All five dental schools in California have received grants to implement the Pipeline program.

#### Program Details:

Within the next few years, the Pipeline funding will enable California dental schools to:

- Double the number of URM/disadvantaged students over the current level by 2007 through increased financial aid, post-baccalaureate programs, and other recruitment efforts;
- Provide an average of 60 day or greater for senior students/residents to work in community clinics;
- Undergo curriculum change (didactic/clinical) to incorporate cultural competence, behavioral issues, etc. and offer students the opportunity to gain experience working in patient-centered work environments; and
- Develop a health policy agenda collaboratively among schools, and work to address issues.

### **Post-Baccalaureate program at UCSF**

Administering Organization: UCSF

Contact: Dr. Charles Alexander, 415-514-2671

Website: <http://dentistry.ucsf.edu/studentaffairs/ucsf-sodosa/ucsf-sodosa-programs.htm>

#### Overview:

The post-baccalaureate program at UCSF assists students from culturally diverse and disadvantaged backgrounds in gaining acceptance into a U.S. dental school.

#### Eligibility:

Applicants must be California residents who come from an economically or educationally disadvantaged background, and must have been denied admission to a dental school within the past year.

#### Program Details:

Participants receive Dental Admissions Test (DAT) preparation, take science courses, observe in UCSF dental clinics, and participate in other enrichment activities. Each of the other four dental schools in California will participate in post-baccalaureate programs through the Pipeline grant.

### **UCSF outreach and recruitment programs**

Administering Organization: UCSF

Contact: UCSF Office of Student Development and Recruitment, 415-476-3151

Website: <http://dentistry.ucsf.edu/studentaffairs/ucsf-sodosa/ucsf-sodosa-programs.htm>

#### Overview:

The outreach and recruitment programs at UCSF are designed to increase the numbers of economically disadvantaged students and students from underserved areas who pursue careers in dentistry.

#### Eligibility:

Varies by program. Programs target students in high school and college who express an interest in science or dentistry-related careers.

#### Program Details:

Varies by program. May include science tutoring, SAT preparation, college admission assistance, summer residential programs, volunteer opportunities, and college tours. These outreach and recruitment programs may be ending, due to budget constraints.

### **Advanced General Dentistry Residency Programs**

Overview: Advanced General Dentistry Programs include General Practice Residency (GPR) and Advanced Education in General Dentistry (AEGD) programs. These programs seek to provide additional training and clinical exposure for recently graduated dentists. Most of these programs consist of one year of post-doctoral work.

#### Administering Organizations:

##### USC - GPR

Contact: Dr. Kenneth Fortman, (323) 226-5051

Website: <http://www.usc.edu/hsc/dental/>

##### UCSF - GPR

Contact: Dr. Frank Gremaldi, (415) 986-4556

Website: <http://dentistry.ucsf.edu/>

##### UCLA - GPR

Contact: Dr. Eric Sung, (310) 206-6407

Website: <http://www.dent.ucla.edu/>

##### University Medical Center of Fresno - GPR

Contact: Dr. Stanley Surabian, 559-459-5725

Website: <http://www.communitymedical.org/>

##### King-Drew Medical Center -GPR

Contact: Dr. Veronica Greene, 310-668-4671

Website: <http://www.dhs.co.la.ca.us/mlk/>

##### UCLA - AEGD

Contact: Dr. Mete Fanuscu, 310-825-1767

Website: <http://www.dent.ucla.edu/>

##### USC - AEGD

Contact: Dr. Lynette Kagihara, (213) 821-8230

Website: <http://www.usc.edu/hsc/dental/>

##### UOP – AEGD

Contact: Dr. Paul Glassman, (415) 929-6490

Website: <http://www.dental.uop.edu/>

## **International dentist programs**

### Overview:

International dentist programs provide a mechanism for dentists trained outside of the United States to receive additional dental training leading to a DDS degree from an accredited dental school. Classes and clinical exposure during the two-year programs are often integrated into the curriculum for third and fourth year dental students at the dental schools.

### Administering Organizations:

#### LLU

Contact: Dr. Bruce Pence, 909-558-7388

Website: <http://www.llu.edu/llu/dentistry/>

#### USC

Contact: Dr. Eugene Sekiguchi, 213-821-5526

Website: <http://www.usc.edu/hsc/dental/>

#### UCLA

Contact: Dr. Donald Rowland, 310-825-8995

Website: <http://www.dent.ucla.edu/>

#### UOP

Contact: Dr. David Neilsen, (415) 929-6688

Website: <http://www.dental.uop.edu/>

#### UCSF

Contact: Dr. William Bird, 415-476-4038

Website: <http://dentistry.ucsf.edu/>

## **APPENDIX 2: METHODOLOGY FOR CALCULATIONS OF UNDERSERVED POPULATIONS AND PATIENT VISITS**

The following section describes the methods we used to calculate the impact of different strategies on access to care for underserved populations.

### *Definitions*

Strategies: The manner/methods used in attracting a licensed health professional to an area for the provision of dental care services

Access: The obtainment of service by a consumer from a licensed oral health care provider at some location (site). A patient visit is the unit of measurement.

Need: Untreated (for any reason) dental disease or conditions

Underserved Populations: The population groups who need but are unable to access oral health services for any reason (experiencing physical, financial, attitudinal, or process barriers to receiving care(Mertz et al., 2000))

Underserved Areas: The geographic area or community in which underserved populations are found

Capacity: The number and distribution of licensed health professionals in an area or practice location

### *Strategy Impact Calculations and Comparisons*

Without surveying each program participant, there is no way to precisely measure the number of underserved patients who have gained access as a result of these programs. Our calculations are based on averages and should be taken as rough estimates of the number of underserved as well as the number of patient visits provided by program participants. When conflicting estimates were available, we always included the lower estimate in our calculations; therefore our results should be considered conservative. It should also be noted that the number of underserved is measured in individual people, while the strategies are measured in patient visits and translated into an estimate of individuals receiving care. The ADA estimates 3.3 patient visits per patient as the annual average, therefore we estimated that every 3.3 patient visits equals one person accessing care(ADA, 2001).

### *Estimates of Underserved Population*

A variety of different population groups (minority, poor, rural, elderly, infants and toddlers, disabled) are considered “underserved” as noted in various publications(Mertz et al., 2000; USDHHS, 2000). Using the March 2003 California Current Population Survey, we identified the numbers of each of these population groups more likely to be “underserved” as calculated for California. As these calculations overlap between population groups we simply took the lowest single number as a rough estimate of our “base value” of 3 million underserved Californians. In addition, using the untreated dental decay rates for specific age, poverty, gender and racial groups reported in the NHANES data (CDC, 2003), we calculated that 9 million Californians are potentially in need of dental care.

### *Loan Repayment Programs*

The current field strength of loan repayment and scholarship programs requiring a service commitment is 51 providers. We assumed that each of these providers is working full time and seeing 100% underserved patients, and assuming the ADA estimates of an average 2550 patient visits annually apply (average is for private practice, if in clinics this is likely higher) this results in approximately 130,050 patient visits for 39,409 underserved persons. With the potential increase of 60 providers in the next few years, using the same assumptions, we can calculate the estimated increase in annual patient visits to be 153,000 for 46,364 underserved persons. Overall, the current capacity plus this potential increase in the future could result in approximately 283,050 patient visits annually for approximately 85,772 underserved populations.

It is important to note that the loan repayment programs have a cohort effect. If you assume that the currently funded annual programs will continue (excluding ending or one-time programs) you will see an annual field staff of 47 program participants providing approximately 120,000 patient visits annually. After each cohort graduates, and assuming 50% retention, that cohort continues to provide approximately 15,300 patient visits per year. If you measure both current and past program participants, one year after the first class graduates the annual patient visits increase to 133,000. At 5 years program participants annual patient visits are up to 190,000 and by 10 years up to 260,000 annual visits.

#### *Foreign Dentists (Mexico Pilot program)*

If the Mexico Pilot program was implemented, 30 dentists from Mexico and the Caribbean could practice at underserved sites in California. Using the ADA estimates of an average of 2550 patient visits annually, this program would provide 76,500 visits per year for approximately 23,182 underserved persons.

#### *Registered Dental Hygienists' in Alternative Practice*

Seventeen new graduates from the RDHAP program per year, each working full time (5 days a week, 50 weeks per year), and providing a minimum of 8 patient visits per day would result in an increase of 34,000 patient visits per year. The RDHAP program provides potential for significant net growth each year with an additional 17 graduates annually. This cohort effect would produce 170,000 patient visits annually after 5 years, and 340,000 patient visits annually after 10 years. The development of a second RDHAP training program may double this number. One significant caveat is that this program does not add to the overall RDH workforce, as RDHAPs must first be RDHs before going through the advanced program.

#### *Pipeline to Professions Programs (at each of the five CA dental schools)*

This program is expected to increase time spent by students in community clinic rotations on average by 16 days (from 44 to 60). If all 635 dental students in California work an additional 16 days in these rotations, and provide on average 4 patient visits per day, this is an estimated increase of 40,640 patient visits for approximately 12,315 underserved persons.

#### *Advanced General Dentistry Residency Program*

Interviews with existing residency programs (both GPR and AEGD) revealed wide variability in the estimated patient load per resident. We did not include specialty residencies in our calculations. Calculations in this report utilize the most conservative possible estimates, calculating 88 residents total, each resident seeing 4 patients per day, 4 days per week for 50 weeks, for a total of 800 visits per year. The estimated percentage of underserved patients at each site is based on personal communications with directors of each of the residency programs. These calculations result in an estimate of 59,160 patient visits for 17,927 underserved persons resulting from current general dentistry residents in California.

#### *PGY-1 Estimates*

This calculation estimates the potential increase in access to care for underserved populations if all dental graduates were required to complete a residency. Of the total 635 graduates per year, 88 complete an advanced general dentistry residency program in a program that serves underserved patients. In addition, another 77 complete a program at a military or Veteran's Affairs training site. We estimate that an additional 18% (or 114 graduates) currently enter specialty training (Weaver et al., 2002). Because of the limited capacity of specialty training programs for expansion, we would expect this number to remain fairly constant, even given the implementation of a mandatory residency program. Subtracting those who currently complete residencies in general dentistry or a specialty area, and net loss (4) at UCSF due to their closure of the AEGD program, this leaves 352 students. If each of these 352 students were to complete a one-year residency at a community clinic and provided 800 patient visits per year, this would result in an increase of 281,600 visits for 85,333 underserved persons.

### *Impact of Retention and Annual Increases*

The potential increases in patient visits this report has identified are calculated at one point in time. However, if all these programs continue to place providers in underserved areas, and those providers stay past their service obligation (which many do), additional percentages of underserved will be reached over time. This potential increase would need to be balanced by two factors that may decrease the availability of services; a declining dentist-to-population ratio, and potential increase specifically in “underserved” populations that may mitigate those increases in availability of care. Data are not currently available to do projections of this nature.

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