The Pipeline Program at the University of Southern California School of Dentistry

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This chapter presents an overview of the Pipeline, Profession, and Practice: Community-Based Dental Education program as it was conducted at the University of Southern California School of Dentistry from 2002 to 2007. Pipeline programs, sponsored by the Robert Wood Johnson Foundation and The California Endowment, were carried out at select dental schools across the United States during this period, with the objectives of increasing recruitment and retention of underrepresented minority/low-income (URM/LI) students, revising the curriculum to prepare more culturally competent dentists, and expanding community-based clinical experiences; these objectives are directed toward the ultimate goal of increasing access to dental care for underserved populations. The case studies on each school are written by National Evaluation Team investigators and are based on multiple data sources and site visits.

Table 5.0.1 in the introduction to the fourteen case studies provides a snapshot of the University of Southern California School of Dentistry in comparison with the other schools in the Pipeline evaluation, using a set of uniform measures to characterize the Pipeline dental schools. The evaluation framework and methods used for data collection and analysis are described in Chapters 3 and 4 of this report.

After a brief overview of the history of the dental school and its environment, this chapter summarizes the major outcomes of the school’s Pipeline program in the areas of URM/LI student recruitment, curricular changes, extramural clinical rotations, practice plans of graduating seniors, and health policy reform. Comments on the program written by representatives of the dental school follow the description of outcomes.

History and Context: The School and Its Environment

The University of Southern California (USC) has a distinguished history of providing community outreach programs that deliver care to underserved populations in the Southern California community as well as internationally. In central Los Angeles, where the university is located, low-income and minority communities reside: 18 percent live in extreme poverty, more than 36 percent are foreign-born, and 9.5 million residents representing more than 100 different racial/ethnic groups coexist within a 2,000 square mile radius. These communities have some of the poorest oral health of any racial and ethnic groups in the nation due to access barriers. The USC investigators have determined the crisis in access is created by patient-related, oral health care provider-related, and payer-related obstacles.

In response to the access crisis, USC continues to manage a wide range of community-based oral health programs to treat the disadvantaged and vulnerable subgroups. As illustration, USC sponsors
programs such as Oral Health Care for the Homeless and the USC Oral Health Center. As partners, the USC School of Dentistry and the Union Rescue Mission (URM), a nonprofit organization whose mission is to serve the poor and homeless residents of inner-city Los Angeles, together operate a USC/URM Dental Clinic. The clinic, which opened in May 2000, is the first comprehensive care dental clinic on Skid Row and the first clinic to care for the oral health needs of homeless children in the area. Other services to children are provided through the USC Oral Health Center. In the Los Angeles Unified School District, about 50,000 children a year report to the school nurses complaining of tooth pain. The majority of the students examined through the USC Oral Health Center have never seen a dentist before, and many are found to have advanced tooth decay that predisposes them to a compromised health status early in life with potential far-reaching health consequences throughout their lifespan. In response to the oral health care crisis, USC has expanded its community outreach programs and mobile clinics to elementary students, with special clinics also for the developmentally disabled, physically impaired, medically compromised, and frail elderly.

Tuition for the USC School of Dentistry would seem staggering to the school’s founders in 1897: the first-year tuition then was $135, with instrument costs totaling $115 over the three-year curriculum. Today’s annual tuition is almost $35,000, and instruments cost $13,480 for the four-year dental program. Although the first class was all male, throughout the first quarter of the twentieth century the school experienced a steady increase in the number of graduates described as “cheerfully coeducational.” Many classes included women and minorities long before the women’s and civil rights movements, and the school has an equally long tradition of welcoming international students.

**URM/LI Recruitment**

Before the Pipeline program, the USC School of Dentistry (USCSD) focused its URM/LI recruitment outreach efforts in three areas: 1) working with historically black colleges primarily in the Atlanta area, including using lists provided by the Graduate Record Exam and the American Dental Association to identify minority test takers and encouraging them to consider the oral health professions and the USC academic program; 2) maintaining relations with the National Association of Minority Medical Educators and the National Association for Equal Opportunity in Higher Education, which provides a direct forum with advisors, educators, and students; and 3) participating in career events with the USC Medical School health profession recruitment programs at local and regional high schools and community and four-year colleges with large numbers of URM/LI students. Despite these efforts, enrollment of African American and Hispanic students declined at USCSD in the pre-Pipeline program years. By 2002, the freshman class had five URM students (two African Americans and three Hispanics), with a total of thirteen URM students in the four-year program.

**Changes in the Recruitment Process**

The 2001–06 strategic plan of the USCSD, “Shaping the Future,” emphasized patient and community oral health and approaches to reduce disparities in southern California. Through The California Endowment (TCE) funding of its Pipeline program, the school hoped to address the high cost of tuition at USCSD by providing assistance to URM students.

Although the school had specifically targeted URM applicants for the Pipeline initiative, the student population was and continues to be tremendously diverse reflecting the racial and ethnic diversity of the Los Angeles population, the continuous influx of immigrant populations, and the long-standing tradition of welcoming international students. However, according to administrative leaders, a major challenge in the short run was identifying sufficiently qualified URM applicants. The very expensive tuition was also a key challenge that was repeatedly mentioned throughout the site visit interviews. USCSD’s major regional competition comes from the University of California, Los Angeles (UCLA) and the University of California, San Francisco (UCSF) dental schools, which have much lower fees. This was one reason USC emphasized the expansion of the pool of qualified applicants in the Pipeline program through the combined efforts of the southern California dental schools to conduct a postbaccalaureate program.

Although scholarship money led to some success in recruiting Hispanic students, at baseline the school had not been very successful in recruiting African American students even though scholarship money was available. USC still felt the need to identify more scholarship money to attract more URM students. Although Pipeline program resources helped attract and enroll URM students, it was more
challenging to determine if the effort was successful in recruiting more students from low-income or disadvantaged backgrounds. This issue is addressed in the recruitment cross-site analysis in Chapter 6.1 of this report.

In 2006, an administrator described three major changes in the recruitment program during the Pipeline program years. First, USC now places greater emphasis on identifying programs with an abundance of minority students; for example, the recruiters tend to visit California State University, Long Beach more often now. Second, USC participated in the regional postbaccalaureate program sponsored by TCE. All totaled, USC enrolled fifteen URM students in 2006 and eleven URM students in 2007. By 2006, all of their postbaccalaureate students were admitted to dental school, and three of the most recent participants were admitted to USCSD. The faculty embraced the program and was delighted with its quality. A third innovation is the Summer Explorers program. Although Summer Explorers predates the Pipeline program as a channel for exposing minority health sciences students to USC, its leaders have now expanded the program in dentistry. Similar to a day camp experience, the two-week summer Dental Explorer Program promotes interest in dental careers by enrolling twenty-five to thirty early college and high school students per summer. The students attend lectures, experience hands-on training, participate in problem-based learning (PBL) cases, conduct research, shadow dental students in clinics, and participate in exercises to demonstrate dental specialties.

Other recruitment program activities were reported in the final year of the Pipeline program (2006–07), such as the following: 1) an eight-week Dental Admission Test (DAT) review program for minority college juniors and seniors conducted by Princeton Review to help students improve their DAT scores to become more competitive candidates; 2) other admissions assistance, workshops, sessions, personal mentoring and counseling, and presentations by successful minority students and professors; and 3) a California Wellness Foundation workforce diversity grant, which was solicited to expand and continue URM recruitment efforts beyond the Pipeline program and which includes supplemental scholarships to match other scholarships raised for URM/LI students.

Figure 5.14.1 shows the increase in URM applicants (2002–06) and actual enrollment in the Pipeline program years (2003–07). This figure shows a steady and impressive increase in URM applications to the school from 109 in 2002 to 250 in 2006. However, the figure also shows that actual enrollment peaked in 2006 at fifteen URM students. The USC Pipeline program leaders achieved and exceeded their four-year Pipeline goal of increasing URM admissions by four students per year. However, in terms of sustainability, by 2007 when the Pipeline funding culminated, URM enrollment had started to decline—to eleven students, approximately the same as 2005 enrollment.

Other Aspects of Recruitment

The greatest challenge in URM recruitment is the cost of education at the dental school. According to one administrator, speaking in 2006: “We are a very expensive private school and, oftentimes, despite your best recruitment efforts, it’s hard for students to see beyond the real consequence of going into debt. That’s the problem that we live with always, and particularly in California, where there are two state schools. So, when you do a cost comparison, the reality sets in for students. And I think it’s particularly so with underrepresented minority students.”

On the other hand, an academic administrator noted major strengths were the ability to allocate resources and materials to recruiting URM students and the support provided through the W.K. Kellogg Foundation and American Dental Association grants, which provided additional resources for the program. TCE funds were used to generate matching funds through the Mexican-American Alumni Association. In the future, USC will also pursue joint sponsorship through the Black Alumni Association and Latinos for Dental Careers. However, since enrollment now has grown so tremendously, with sixty new freshman students in 2006, this places a burden on the existing scholarships. Also mentioned by an administrator as a strength was the opportunity to have a dialogue with URM students coming into the program, developing a relationship with them and having them feel more comfortable about the program.

When queried about changes in the admissions process and whether the Pipeline program played a role in those changes, one academic administrator in 2006 noted, “We did not do anything differently; we never discriminated and never had quotas.” USC enrolls many students from foreign countries. Similarly, the school enrolls URM students and, the administrator continued, “These students are treated just like everyone else”; the administrators “truly do not see any differences.” This administrator suggested that since
USC is a private school, the tuition is the force that segregates who applies to the school. Although the school conducts outreach to URM students and does have scholarships and diversity, in many cases higher tuition trumps the effects of the Pipeline program.

The bar for admissions criteria has been raised: with higher numbers of applicants, USC has selected students with higher DAT scores and higher GPAs. However, the twelve-person Admissions Committee, primarily comprised of dentists but including some non-faculty interviewers and one dental hygienist, does take into account life circumstances and whether students are working their way through college. Nevertheless, there are thresholds that applicants must meet to be considered part of the candidate pool.

One administrator noted an attitudinal change and increased willingness to help with recruitment among the faculty in 2006, describing it as an effect of the Pipeline program that “has bubbled to the top,” with ownership among many faculty members contributing to the success of the project. However, this administrator was not sure the USC Pipeline recruitment activities deserved full credit, referring to it as the “perfume effect.” Everyone was working at the state and national level, this administrator explained, and a lot of results were due to refocusing attention on the workforce diversity concerns.

Before the Pipeline program, USC essentially used a shotgun approach to recruitment. The primary lessons learned include the value of consistency of effort and focused recruitment activities at schools with a high concentration of URM/LI students.

Regarding TCE Statewide Recruitment Committee activities, one administrator noted that Howard Bailit’s leadership was a great strength in the statewide efforts stating, “He has a way of keeping people on task.” The recruitment committee provided an opportunity to communicate and collaborate with colleagues around the state to discuss common issues and concerns and bounce around new ideas for effective recruitment.

**Sustainability of Recruitment Efforts**

Stakeholders at USC were asked whether recruitment efforts (programs, policies, operations, etc.) were sustainable after the Pipeline program ends. An administrator said that one mechanism that will help to sustain recruitment activities was the promotion and expansion of the director of recruitment’s position to assistant dean for admissions, minority, and student life. Another structural change involved a modification in the job duties of newly hired faculty.
New community health faculty members are now expected to participate in URM recruitment to the dental school. One administrative leader described the Pipeline program as a “momentum builder” that involved more people contributing to the recruitment process and supporting the effort. As a final measure to sustain the USCSD recruitment efforts, the school has secured substantial funding from two foundations to continue Pipeline program-related activities. In general, the answer to the sustainability question appears to be “yes.” The USCSD dean supports the program and the outcomes, according to one administrator. According to this administrator, the program will be sustained, perhaps not at the same level and intensity now that funding has ended, but the school does not expect to take steps backwards.

The goal is to continue to increase URM enrollment after the culmination of the Pipeline program. “Pipeline has been invaluable,” said an administrator. “We have been struggling to increase [URM] diversity of the student body for years and years. The Pipeline project has been the momentum builder to bring more and more people to the plate; now we have a burst of steam.”

USCSD also hopes to continue to identify and develop other resources and foundations to support and sustain recruitment activities and URM enrollment after the conclusion of the Pipeline program funding.

Curricular Changes

One of the cornerstones of USC’s reputation lies with its renowned faculty and their reputation as educators, scientists, and clinicians. Among its current 115 full-time faculty members and 503 part-time faculty members, there are two members of the Institute of Medicine, four Fellows of the American Association for the Advancement of Science, and two former recipients of National Institutes of Health (NIH) MERIT awards.

The USCSD was the first dental school in the nation to embrace a complete transformation of the traditional curriculum into a problem-based learning (PBL) curriculum and pedagogy. As originally conceived, the scope of the PBL curriculum ranges from the molecule to the community, which mirrors the emerging NIH Roadmap Initiative to promote clinical and translational science. The objectives of the PBL program are to educate students who will be committed to lifelong, self-motivated learning; skilled in the techniques of problem-solving in a clinical setting; well prepared to deal with the future advances in dental therapy and dental care delivery; able to deal with the medical presentations of dental patients; effective in group learning/accomplishment environments; and highly skilled in the delivery of dental health care of outstanding quality.

At the onset of the Pipeline program, the faculty pondered how best to integrate diversity and cultural competence training into the PBL cases. At baseline, USCSD was in the fourth year of replacing its traditional curriculum with the PBL program. During orientation week, nine PBL cases are typically assigned to help students learn how to work in teams and respect each other’s cultural background. During this orientation, students become sensitized to issues of gender, race, ethnicity, religion, and sexuality, simply by virtue of working in diverse student groups. In the PBL curriculum, all learning goes on within the context of a case, which is presented in stages to a small group of eight students who are assigned to a group based on criteria to ensure group diversity. USCSD also emphasizes Spanish for Dentistry as an elective course.

Highlighted Cases in Cultural Competence

At the initiation of the Pipeline program, virtually no PBL cases highlighted diversity and cultural competence. By academic year 2006–07, as seen in Table 5.14.1, five PBL cases were used to increase awareness and stimulate learning among the groups. Each case included information providing ethnicity, language, gender, and religion of the patient. Students were encouraged to consider how culture may impact a patient’s behavior, willingness to accept treatment, access to care, and other issues. Approximately 10 percent of the PBL cases had major learning objectives related to cultural issues. As the Pipeline program concluded, the faculty was planning for the next stage of curriculum refinement, including how best to systematically monitor PBL cases and facilitators, since the curriculum committee structure and processes were being reorganized.

USCSD selected three PBL cases to highlight, all of which demonstrate substantial change and/or innovative content, teaching, or evaluation methods. Synopses of these PBL cases are provided in Table 5.14.2.
Other Aspects of Curricular Change

Among three stakeholder groups at USC, responses to questions asked during the 2006 site visit about faculty modeling of culturally competent behavior were either neutral or equivocal—suggesting that some but limited modeling of communication skills and treatment of culturally diverse patients in the community-based curriculum had occurred by

Table 5.14.1. Curricular revisions: USC School of Dentistry

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Baseline Courses</th>
<th>Final Courses</th>
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<tbody>
<tr>
<td></td>
<td>Hours</td>
<td>Year</td>
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<tr>
<td>Freshman Orientation</td>
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<td>N/A</td>
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<tr>
<td>Community Clinic Rotation</td>
<td>N/A</td>
<td>N/A</td>
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<tr>
<td>Verna Williams PBL Case</td>
<td>3</td>
<td>D1</td>
</tr>
<tr>
<td>George Gonzales PBL Case</td>
<td>3</td>
<td>D1</td>
</tr>
<tr>
<td>Rita Has a Cough PBL Case</td>
<td>3</td>
<td>D2</td>
</tr>
<tr>
<td>Eisenhower's Extraction PBL Case</td>
<td>3</td>
<td>D3</td>
</tr>
<tr>
<td>Abner Jordan PBL Case</td>
<td>3</td>
<td>D3</td>
</tr>
</tbody>
</table>

Sources: Data from school’s implementation report for 2003 and NET site visit interviews in 2006.

Table 5.14.2. Problem-based learning (PBL) case synopses: USC School of Dentistry

George Gonzalez: George is a two-week-old male infant born to an immigrant family from El Salvador. The pregnancy and delivery were full term and uncomplicated. Baby George was born with cleft lip, cleft palate, and a hemangioma across the bridge of his nose. There is no family history of cleft lip, cleft palate, or other inherited diseases. The baby is fit with an obturator. Parents consent to genetic testing. They return with a thriving George at ten weeks to schedule his first surgery. At this time, George's parents confess that his facial malformations had upset them greatly and they had consulted with a curandero, believing that there was an evil eye/witchcraft on the family. Cultural questions/learning objectives include: What is curanderismo? Was the curandero treating a pregnant mother with herbs or other remedies? What other alternative medical treatments do people turn to? How do traditional beliefs affect patient health care behavior and attitude? And how do you discuss the limits of esoteric healing practices without alienating patients?

Verna Williams: Verna Williams is an attractive, well-dressed, thirty-five-year-old, African American woman who comes to your dental office as a new patient for a checkup. She completes your new patient paperwork. Upon examination, you notice what appears to be a gingival anomaly in the anterior maxillary gingival area (the gingival tissue is black from cuspid to cuspid but otherwise appears healthy). You order full mouth radiographs and study casts to complete the examination. Ms. Williams returns the following week for a treatment plan and a hygiene appointment. You inform the patient that she has discolored gingival. You explain that it is disfiguring but not a health issue. You also inform her that she has the option of undergoing a gingivoplasty to correct this. The patient then informs you that she had her gums tattooed as a young teenager because it was considered a sign of beauty in the village where she was raised in Ethiopia. Your remark about the disfiguring gingival has caused embarrassment for you and the patient. Cultural questions and learning objectives include: Realize that we are living in a smaller world and treating patients from many cultures. Should you ask patients’ perception of their smile before you comment on esthetics? Can you keep an open mind about different perceptions of beauty, status, etc.? And could the patient have rejected your treatment plan because of your ignorant remark?

Rita Has a Cough: Rita Madrid is a twenty-three-year-old Hispanic woman who arrives at your office. She tells you, “I’ve had a cough for a month. Two nights ago I coughed up blood.” She also explains that she has experienced increased fatigue, shortness of breath upon exertion, chest discomfort, and periodic night sweats, and last night her temperature was 102 degrees F. Rita has taken an over-the-counter cough preparation (Robitussin). Since it was not effective in eliminating her cough, she purchased another over-the-counter cough medication with codeine in Mexico, where she travels regularly to visit her extended family. She reports that her cough improved temporarily with the continued use of codeine. Results of tests you order for Rita return positive for active TB. You decide to treat Rita as an outpatient and prescribe a medication routine of Isoniazid, Rifampin, and Pyazinamide. Cultural questions/learning objectives include: Will Rita purchase TB medications in Mexico? Are medications (content and dosage) purchased in Mexico comparable with U.S. drugs (expiration dates, contamination, counterfeit, etc.)? Since your Los Angeles practice is so close to the border, how many other patients are filling their prescriptions in Mexico?

Source: Data from NET final site visit October 30–31, 2006.
the culmination of the Pipeline program. Fourth-year students pointed out the challenges related to treating a high volume of Spanish-speaking patients and the need for language capability while in school; however, some students were reluctant to spend time learning the Spanish language because it would not be relevant for them after graduation. Responses from clinical and didactic faculty members were mixed and suggest a range of modeling behavior depending on factors such as attitudes, comfort, sensitivity, and exposure to faculty development. However, one clinical professor suggested a more systematic approach to modeling communication skills: “In our particular clinic, we have pre-session and post-session, where we review the patients’ medical and psychological profiles as they pertain to dental treatment and as a whole patient treatment. . . . We come together at the end of each clinical session and we discuss the outcomes and what people found. We try to model culturally appropriate interview techniques and treatment techniques.”

Several stakeholders (a senior administrator, administrator, and clinical faculty members) interviewed in 2006 were positive that the curriculum prepared the students very well to interact with diverse patients. Much of the success was attributed to the PBL program and the diverse composition of students in small learning groups, which were reconfigured each trimester. A senior administrator noted, “The faculty try to form groups with a diverse level of knowledge, expertise, and ethnicity because it forces the student in a small group to learn differences that they have, which would go unnoticed, in a lecture room where you have over 170 students” (144 students per class per year with the addition of thirty-two international students). Through the evaluation process, the students rate themselves, receive feedback on their skills and competence, and become more sensitized to how they are being perceived either positively or negatively by the other group members. On the other hand, two stakeholders were less sure about the preparedness of students; the fourth-year students had varying and equivocal perceptions, and a clinical administrator stated, “I guess there’s always room for improvement.” Although some clinical faculty members take students aside and explain cultural differences and implications for treating patients, this type of interaction between faculty and students was not as consistent as some would like to see.

Table 5.14.3 summarizes challenges and barriers at baseline and at the culmination of the Pipeline program at USCSD.

Extramural Clinical Rotations

USCSD proposed at the initiation of the Pipeline program that students from every class, freshman through seniors as well as residents, would be involved as a multiyear, vertical team to provide community care. USCSD describes this vertical team as individual students from each class working as a team performing care as appropriate given the individual’s level of training. With minimal attrition,
Table 5.14.3. Leveraging opportunities and overcoming barriers to change: USC School of Dentistry

<table>
<thead>
<tr>
<th>Opportunities and Barriers at Baseline</th>
<th>At Pipeline Culmination</th>
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<tbody>
<tr>
<td>1. USC has a long-standing reputation for partnering with the community. Community organizations requested help with the oral health care access crisis, which also fulfills Pipeline program objectives. (USC Proposal 2003)</td>
<td>“The challenges are always changing, which is difficult for everyone. The more we get into the community, the less useful is our traditional model of dental education, of keeping people within the building and in the four walls of the school. . . . It’s a challenge that we continue to make inroads.” (Academic Administrator, 2006)</td>
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<td>2. The Pipeline program came along at an opportune time when the PBL curriculum was ripening through testing and refinement. Faculty thought it would be easy to emphasize diversity/cultural competence in PBL cases. The general thinking was that “changing PBL cases is much easier than changing courses.” (Site Visit 2005)</td>
<td>“If a faculty member modifies a case, they need to inform eighteen different faculty members who are facilitating that case at the same time. The challenge is to make all faculty members aware of the cultural issues in a case and to facilitate the learning needs of students.” By the culmination of the Pipeline program, the faculty had concluded that changing PBL cases was a bit more complicated than earlier anticipated. (Academic Administrator, 2006)</td>
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<tr>
<td>3. Student learning groups are diverse in terms of gender, race/ethnicity, and religion. (Site Visit 2005)</td>
<td>Students get a cultural understanding from their peers; this interaction helps students to develop communication skills that translate to the diverse population at large. As an added benefit, students get a peer support group. (Fourth-Year Students, 2006)</td>
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<tr>
<td>4. Build “living cases” at community rotation sites to emphasize different practice settings and population subgroups. (Site Visit 2005)</td>
<td>Students rotate through a broad spectrum of settings and population subgroups. This experience provides fertile ground for developing insights into different ways to organize and practice dentistry and for communicating with a wide range of subgroups, including diverse age, race/ethnicity, and special needs populations, such as homeless and institutionalized elderly. (Academic Administrator, 2006)</td>
</tr>
</tbody>
</table>

Sources: Data from NET baseline visit December 2–3, 2004, and final site visit October 30–31, 2006.

Sources: Data from ADEA surveys of dental school seniors. USC’s response rates (and number of surveys returned) for the following years are as follows: 2003=100% (n=131); 2004=70% (n=114); 2005=67% (n=118); 2006=54% (n=94); 2007=36% (n=62).

Figure 5.14.2. Senior students’ perceptions of adequacy of CBDE curriculum, by percentage of total respondents at USC School of Dentistry
it was estimated that all 144 students per class per year (freshman and sophomore classes) and 176 students per class per year (junior and senior, including thirty-two international students) would be required to participate in community-based programs. These included community education, school-based sealants, mobile clinics, and homeless, geriatric, and special needs programs. Additionally residents in the advanced education in general dentistry (AEGD), general practice residency (GPR), and pediatric dentistry programs were to be part of the vertical team participating with the multiyear dental student groupings at several sites, such as the USC Rescue Mission Dental Clinic and rotations at the Los Angeles County/USC Medical Center, Children’s Hospital Los Angeles, Rancho Los Amigos Medical Center in Downey, and Long Beach Miller Memorial Hospital. Specifically, at the end of the fourth grant year, the mathematical average of the residents and the senior dental students was projected to equal sixty days of community service, 25 percent of which would be in rural communities.

Changes in the Clinical Services Program

At baseline, the USCSD clinical education program emphasized health promotion, risk assessment, disease prevention, diagnostics, treatment planning, treatments and therapies, and outcomes assessment. These themes were fostered in small group learning, within various types of patients and community venues, and through service-learning. As suggested above, at baseline the school had a wide range of partnerships providing clinical rotations for students and residents including several residency programs, the Advanced Standing Program for International Dentists, and community-based organizations providing preventive and clinical treatment through patient-centered care. As part of its 2001–06 strategic plan, the USCSD was developing an IT (information technology) infrastructure that would allow the realization of a “virtual school of dentistry” extending from central California (Bakersfield) to the Mexican border.

The school’s strong extramural rotation program served as an excellent launching pad to achieve the sixty-day rotation goal. Some of the strengths of the extramural rotation program identified at the 2005 site visit were the strong support from faculty, students, and the community; extensive links with community partners and sponsors; and a wide span of exposure to different patients, practice settings, and population groups. The plan to move forward towards the sixty-day goal was to develop additional partnerships with community-based clinics to expand the rotation program (Watts, St. Barnabas, etc.). The faculty also planned to increase the length of time students spent at existing sites (from an initial average of around seven days per site). The strategy was to increase the capacity at several existing rotation sites by installing new chairs at the USC Union Rescue Mission, raise capital and purchase a new fully equipped trailer for the USC Queenscare II mobile clinic, and add additional rotation days at the Special Patients Clinic at USCSD.

Core Community Rotations

Figure 5.14.3 shows the number of rotation sites over the four years. Urban sites increased by one (from eleven to twelve), and one rural site was added. In its original Pipeline program proposal, USCSD estimated total days of community rotation per students and residents would be thirty-six in year 1, forty-three in year 2, fifty-one in year 3, and sixty in year 4. Additionally, the TCE-funded schools were allowed to calculate resident (pediatric, AEGD, GPR) rotation days as part of the outcome measure. Table 5.14.4 shows rotation days per senior dental student and resident. Senior rotation days increased from twenty-three days in 2003 to thirty-five days by 2007. Rotation days per resident increased even more, from 129 in 2003 to 174 by 2007.

Other Aspects of Extramural Clinical Rotations

Senior dental students participated in the ADEA senior survey each year. Figure 5.14.4 shows that approximately 70 percent of USCDS seniors perceived extramural rotations as positive experiences throughout the Pipeline program. Greater improvements were reported regarding time spent in extramural rotations. Early in the Pipeline program, 69 percent viewed the time spent in rotations as appropriate. In subsequent years, greater than 80 percent to almost 90 percent of senior dental students reported the time spent in rotations was appropriate. Some of the major opportunities and barriers the school needed to address early in the Pipeline program and how they were dealt with are summarized on Table 5.14.3.
Sustainability of Community-Based Programs

USC’s extramural rotations will be sustained through continued support from the dental school, university, agencies, government contracts, and foundation grants. At one of the new sites, a shared revenue arrangement with the community site will provide funding to the school to sustain the program. However, at many sites, according to an academic administrator in 2006, USCSD receives no resources from the patients and no MediCal reimbursement for services provided, since neither DentiCal nor patients themselves are billed and these clinics serve as true safety net providers, with the revenue coming from foundation and government sources. In the future, shared revenue and patient payment mechanisms will be part of the discussion in negotiating new pilot programs. However, many clinics are concerned that the predoctoral students and their lower productivity compared to residents will pose a barrier to shared revenue arrangements.


Note: An extramural facility located in a rural site is also considered located in an urban site.

Figure 5.14.3. Structure of extramural rotations: USC School of Dentistry

Table 5.14.4. Rotation days per senior and resident: USC School of Dentistry

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<thead>
<tr>
<th></th>
<th>Days</th>
<th>Std</th>
<th>Day/Std</th>
<th>Days</th>
<th>Std</th>
<th>Day/Std</th>
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<th>Std</th>
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<td>Seniors</td>
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Sources: Data from school’s implementation reports 2003 through 2007 and conversation with Niel Nathason 12/10/07.
Std=student or resident
Sources: Data from ADEA surveys of dental school seniors. USC’s response rates (and number of surveys returned) for the following years are as follows: 2003=100% (n=131); 2004=70% (n=114); 2005=67% (n=118); 2006=54% (n=94); 2007=36% (n=62).

Figure 5.14.4. Senior students’ perceptions of extramural (EM) rotations, by percentage of total respondents at USC School of Dentistry

**Practice Plans of Graduating Seniors**

Evaluators interviewed a range of stakeholders in 2006 to determine how the school helps seniors learn about employment opportunities to care for underserved populations. Findings were mixed. A senior administrator and a faculty member each indicated the school does very well in providing information and mentioned a plethora of opportunities including exposing students to diverse extramural rotation settings; tuition reimbursement in exchange for a community health center (CHC) year; other short-term CHC employment contracts and general CHC recruitment upon graduation; recruitment from other dental care safety net organizations, such as the California Primary Care Association and the Rural Heath Association; the National Health Service Corps loan repayment program; and designating a specific faculty member to promote community and public health employment opportunities. However, other stakeholders interviewed were not as aware regarding these employment opportunities upon graduation, suggesting a possible communications gap between graduating seniors and clinical administrators and faculty.

When queried about barriers for graduates to practice in community clinic and public health settings, five out of six stakeholders stated educational debt was the major barrier. Additionally, fourth-year students mentioned low compensation by safety net organizations, and a member of the clinical faculty mentioned limitations in federal funding. Recommendations for increasing the number of graduates willing to care for disadvantaged populations include the following: 1) continue to expose students to diverse practice settings; 2) increase scholarships in which students exchange tuition for community service; 3) develop a model by which multiple organizations subsidize tuition and, in return, graduates practice in designated clinics for a designated period of time; 4) designate an office to gather and disseminate career opportunity information; 5) increase education in cultural competence; 6) improve awareness regarding the dental care access problem; and 7) recruit more URM and other students predisposed to care for the underserved to dental schools.

Figure 5.14.5 shows ADEA senior survey results for two indicators are mixed. Among senior
dental students, decreasing percentages planned to care for URM patients from 2003 to 2006, with percentages in 2007 approximating the 2003 level. Some gains were realized in the Pipeline years among seniors planning to provide care in a community clinic or government service upon graduation, but these did not show a consistent pattern over time, ranging from a low of 4 percent in 2005 to a five-year high of 13 percent in 2007.

Health Policy Reform

In February 2003, the USCSD organized and conducted the first major meeting in Los Angeles on oral health issues. This Los Angeles Oral Health Summit brought together stakeholder groups from across the state to deal with access to care and to create a plan for addressing the needs of increasing numbers of people without dental care. The summit demonstrated USCSD’s commitment to collaboratively create a long-term strategy to develop regional and national policies and programs to reduce oral health disparities. Another example of involvement in shaping health policy was a six-year effort by faculty to gain fluoridated drinking water in Southern California through planning, testimony, and lobbying.

By the Pipeline program’s culmination, several additional meetings were convened of the Los Angeles County Oral Health Collaborative, a new group expanded from the previous Dental Coalition for Needy Children. The collaborative includes representatives from academia (USC and UCLA), organized dentistry (LA Dental Society and LA Oral Health Foundation), public health (assistant dental director), community clinics (Community Clinic Association of LA County), school districts, and the community to discuss issues of funding, public education, dental workforce, and related oral health legislation. Dr. Eugene Sekiguchi, USCSD associate dean and past president of the ADA, is an advisor to this group. As a recommendation of these meetings, USCSD hosted in June 2007 a facilitated forum titled “Oral Health in Los Angeles: Not Everyone Is Smiling,” supported by the TCE Pipeline grant. Targeted audiences were foundation officers, elected officials, and about fifty other participants, with the aim of increasing awareness regarding oral health needs and advocacy for oral health projects. The USCSD Office of Community Health is presently in the process of compiling the proceedings. The proceedings will be disseminated to garner financial and political support to execute focused, collaborative efforts to address oral health care access issues.

Sources: Data from ADEA surveys of dental school seniors. USC’s response rates (and number of surveys returned) for the following years are as follows: 2003=100% (n=131); 2004=70% (n=114); 2005=67% (n=118); 2006=54% (n=94); 2007=36% (n=62).

Figure 5.14.5. Senior students’ practice plans, by percentage of total respondents at USC School of Dentistry
Major Conclusions

This case study provides a description of the USCSD’s Pipeline program activities over the past five years. It has been a rich experience. The school shows gains in URM recruitment and has been awarded solid funding to sustain recruitment efforts after Pipeline funding culminates. USCSD was the first dental school in the nation to design and execute a complete problem-based learning (PBL) program. With the PBL program to build on, student learning groups were formed to draw upon and expose students to the enormous diversity already present in the school’s population. The faculty learned over the course of the Pipeline program how to transform existing PBL cases so students learn about and are able to develop cultural competence. The cases are designed to develop increasing sophistication over the four years and are integrated with the extramural rotation experience. The USCSD extramural rotation program was already strong when the Pipeline program was initiated and has expanded. In addition, involvement with oral health advocacy and policy issues has been strengthened. USCSD remains one of the leading institutions in California and the nation when it comes to responding to community needs and the critical oral health care access crisis.

REFERENCES


Comments from the University of Southern California School of Dentistry

Pipeline Principal Investigator, Roseann Mulligan, D.D.S., M.S.
Niel Nathason, M.A., M.P.H.

The University of Southern California School of Dentistry (USCSD) has been an active member of The California Endowment-funded Pipeline program of California dental schools, which were integrated into the national Robert Wood Johnson Foundation (RWJF)-funded Pipeline program. Considering we only had a four-year grant (2003–07) and did not have the planning year that the RWJF projects did, we feel we were able to “jump in running” fairly well.

Prior to the Pipeline program, USCSD had a number of existing community outreach and service projects for disadvantaged populations: for example, the mobile clinic (rural children), Union Rescue Mission clinic (urban homeless), sealant project (inner-city children), HIV/AIDS program (urban underserved), children’s hospitals (medically compromised children), Hollenbeck Home (frail elderly), and Dental Explorers (minority students). Through these projects, the school had established its commitment to serving multicultural, low-income communities in urban and agricultural areas of Southern California. However, the Pipeline program has assisted us greatly in expanding and enhancing our underrepresented minority (URM) recruitment, cultural competence, and clinical outreach programs.
Our Office of Admissions had recently developed the Dental Explorers summer enrichment sessions for minority late high school and early college students as well as our Minority Student Dental Association prior to the Pipeline initiative. This was in response to our awareness that our URM student enrollment had decreased from a peak in past years and our commitment to increasing the diversity at our school. The school had also been making an effort to hire more URM and female dental faculty members as role models for enrolled and prospective students. The Pipeline program has given us much needed staffing and support for increased URM recruitment and retention activities, including the very successful Southern California regional postbaccalaureate program (held in conjunction with the University of California, Los Angeles and Loma Linda University) and the national American Dental Education Association (ADEA)/W.K. Kellogg Foundation scholarships. These have allowed us to also leverage funding for other programs, including our new California Wellness Foundation-sponsored Dental Admission Test (DAT) program for minority college students and additional scholarships. We were also able to receive an ADEA/Pipeline mentoring grant for further outreach to community and alumni mentors for URM predental and dental students.

Our educational pedagogy had already changed to a PBL model a few years before the Pipeline program, with resultant small student discussion groups more suited for personal interaction. While this training included numerous cases related to a diverse patient base, the focus had been mainly scientific and clinical issues. Furthermore, we no longer had a formal public health course. The Pipeline program gave us the ability to add components of community dentistry and public health and issues of culture and language to related existing cases. We reinforce these themes at our community clinic sites through pre- and postclinical sessions. We were also able to add a Spanish for Dentistry selective class, offered to students twice each year. We are still enhancing and adding more PBL cases, but approval of them has been on hold due to preparation for upcoming reaccreditation.

We had prided ourselves in our extensive community service activities and long-standing community partnerships prior to beginning the Pipeline partnership. Our collaborations had been unique in our working with various community partners to develop mutually agreed upon projects to provide access to particular underserved populations (for example, at-risk children, medically compromised elderly, homeless, and HIV/AIDS patients). Our strength had been in starting new clinical programs (mobile clinic programs and fixed clinic sites) to provide care where none had previously existed. Our involvement with the Pipeline program, though, has not only prompted us to increase the student and resident rotation time through these existing venues, but also to seek new types of collaborations. In particular, we have been meeting with community clinics and federally qualified health centers (FQHCs), which we see as sustainable sites for models of improving access to care for the underserved, while also expanding student clinical experience, enhancing cultural competence, exposing students to new practice models, and, hopefully, increasing the workforce at these chronically understaffed clinics through future employment opportunities for some of our interested graduates.

We have designed and implemented several surveys to try to evaluate how our community rotations are impacting our students personally—not just from a perspective of their clinical skills. (We already knew that the students’ clinical skills were improved by being in these clinics where productivity was expected to be higher than at the dental school clinics.) One questionnaire has been a service-learning overview of all our community rotations and of students’ “opinions and interests regarding community health care”; another involves students rotating through our USC-Union Rescue Mission Dental Clinic and their attitudes regarding treating the homeless. Our students value these experiences, and most actually wish for more time at these sites, with their perceptions of the indigent generally improved by the community rotations.

We feel that these types of evaluations are more important than the heavily quantitative patient data collection that the Pipeline program’s National Evaluation Team compiled. A longer-term evaluation is needed, with comprehensive tracking of graduates. What we really need to know regarding the Pipeline initiative is where and how our graduates will practice, who they will serve, and what care they will provide. Have our efforts really made a difference in attracting more diverse students, who become more culturally competent, and who are more willing to provide care to those in need? Continuing emphasis in these educational areas and follow-up evaluation over a sustained period of time are necessary next steps to assess the impact of what this project has begun.