The Origins and Design of the Dental Pipeline Program


Abstract: Funded by The Robert Wood Johnson Foundation and the California Endowment and with student financial aid from the W.K. Kellogg Foundation, the primary goal of the Pipeline, Profession, and Practice: Community-Based Dental Education program is to reduce disparities in access to dental care. In a national competition, fifteen dental schools were selected to participate. By the final year (2007) of the five-year project, the schools are expected to achieve three objectives: 1) increase the time (sixty days/year) that senior students and residents spend in patient-centered community clinics and practices treating underserved populations; 2) provide didactic and clinical courses for students and residents that prepare them for their community experiences; and 3) recruit more underrepresented minority and low-income students. The national program office that directs the project is located at Columbia University, and a national advisory committee oversees the program for the sponsoring organizations. The challenge is to demonstrate that the Pipeline objectives are achievable and that the program is sustainable without external support.

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In 2001, The Robert Wood Johnson Foundation (RWJF) approved a six-year grant for the “Pipeline, Profession, and Practice: Community-Based Dental Education” program that addressed disparities in access to dental care. The W.K. Kellogg Foundation contributed financial aid to students recruited under the Pipeline program. A year later, the California Endowment (TCE) joined this effort and provided funds to support four California dental schools. The combined RWJF, TCE, and Kellogg support represents the largest commitment of resources to dentistry and dental education ever made by private foundations. The purpose of this article is to describe the origins and design of this project and the process used to select participating schools.

Context of the Program

The rationale for the Pipeline program is set in the context of important challenges facing the dental delivery system and dental education.

Although income and racial disparities in oral health are declining, large disparities in access to care continue. This issue gained national attention with the publication of the 2000 Surgeon General’s report on oral health in America1 and the future of dentistry report by the American Dental Association.2 In addition, numerous studies have quantified the types and extent of disparities in access and oral health, and surveys of low-income populations have identified access to dental care as a critical health problem.3-5

An important component of the access problem is the lack of diversity in the dental profession. The non-white population of the United States is growing rapidly, and in some states whites are no longer the majority population. In contrast, only 6.8 percent of dentists and 11.7 percent of dental students are from underrepresented minority groups (African Americans, Hispanics, and Native Americans).6-7 The lack of diversity increases the access problems of minority (and low-income) populations.8

At the same time that access disparities have become a more salient national issue, the economy declined, and many states reduced funding for their dental Medicaid programs. These reductions exacerbated the access problem.
Dental schools are part of the dental safety net system and provide care to low-income populations. About 11 percent of dental school clinical revenues come from the Medicaid program, but a large percentage of their patients are from low and middle-income groups that do not have public or private dental insurance. Although most schools treat the underserved, their primary mission is education, and students and residents treat relatively few patients, because dental school clinics are organized around educational rather than service objectives. For example, in 1999 (the most recent data available), the median clinical income generated per senior student was $11,680.

The financial capacity of the thirty-six state-supported dental schools to treat low-income patients is seriously threatened by a ten-year decline in the rate of increase in federal and state support for dental education and by increasing disparities between faculty and community practitioner incomes. Schools are under great pressure to raise net clinical revenues, but this is difficult to accomplish when a majority of patients are covered by Medicaid or unable to pay higher fees because of lack of insurance and low income.

These financial problems also impact the recruitment of underrepresented minority and low-income students. Schools have increased student tuition and fees an average of 7 percent per year for the past several years to compensate for the relative decline in the level of public support. As a result, the debt of graduating students has increased rapidly, making it more difficult to recruit economically disadvantaged students.

**Foundation Support**

**The Robert Wood Johnson Foundation**

The RWJF is the largest foundation in the United States devoted exclusively to the improvement of health and health care. In the 1970s and 1980s, the RWJF funded several large dental projects aimed at preventing oral diseases and reducing access disparities but had a limited oral health portfolio from 1985 to 2000. In the late 1990s, RWJF noticed a significant upturn in unsolicited proposals that described troubling gaps in access to dental care. The foundation’s Local Initiative Funding Partners program reported that about 25 percent of proposals were requesting funds to support improved access to dental services. Coupled with the release of the Surgeon General’s report on oral health, the foundation decided to renew its investment in oral health and to focus on reducing dental access disparities. A recently hired senior program officer (the fourth author of this article) who had experience operating programs targeted to low-income communities assumed responsibility for this program area.

The senior program officer spent eighteen months meeting with leaders of the dental profession, community groups, public health officials, academics, and others with a knowledge of and interest in oral health. She became aware of a successful program directed by the Columbia University School of Dental and Oral Surgery to provide care to underserved populations in New York City through a network of community clinics staffed by Columbia faculty and residents. About the same time, promising findings from a feasibility study funded by the Josiah Macy Jr. Foundation were released. The study examined the potential impact on dental education of having dental students and residents spend more time in community clinics and practices treating underserved patients. From these experiences, the senior program officer designed a strategy to address access disparities built around dental education. These strategies resulted in the Pipeline program proposal that was approved by the RWJF Board of Trustees in May 2001.

**The W.K. Kellogg Foundation**

The Kellogg Foundation has a long history of supporting oral health projects for low-income populations. In 1995 Kellogg gave Columbia University School of Dental and Oral Surgery a $1.1 million grant to provide dental services to the residents of northern Manhattan. Working with the local community, the dental school created Community DentCare, a dental care system located in public schools and health clinics. The school also received one of Kellogg’s Community Voices grants, an initiative designed to improve the medical and dental safety net in underserved communities. Because of this experience, Kellogg became aware of the Pipeline effort and launched the $1.1 million W.K. Kellogg/ADEA Access to Dental Careers program. Grants are made to RWJF Pipeline schools to help them recruit underrepresented minority students and
to provide direct financial assistance to dental and postgraduate students.

The California Endowment

TCE is a private, statewide health foundation devoted to expanding access to affordable, quality health care for underserved individuals and communities and to promote fundamental improvements in the health status of all Californians. Established in 1996 as a result of Blue Cross of California’s creation of Wellpoint Health Networks, a for-profit corporation, TCE is the largest foundation in California. Guiding TCE’s work is a multicultural approach to health. This approach seeks to mobilize the talents, cultures, and assets of California’s diverse populations to improve the quality of the state’s health systems and to promote improved health outcomes at the community level.

TCE’s work focuses on four program areas: access, cultural competency, disparities in health, and workforce diversity, as well as two special initiatives: agricultural worker health and mental health. Support for the Pipeline program comes from the workforce diversity program, which aims to increase the diversity and improve the geographic distribution of California’s health workforce. The primary strategy to achieve this objective is expanding the number of underrepresented minorities in the dental, medical, and nursing professions who practice in underserved areas. In February 2003, TCE partnered with RWJF on the Pipeline program and provided support for four California dental schools to participate.

Pipeline Program Goals, Objectives, and Rationale

The primary goal of the Pipeline program is to reduce disparities in access to dental care.

To achieve this goal, the objectives are to:
1. have senior students spend an average of sixty days in patient-centered community clinics and practices treating underserved patients;
2. provide students with didactic courses and clinical experiences to prepare them for treating disadvantaged patients in community sites; and
3. increase the number of underrepresented minority and low-income students enrolled in Pipeline dental schools.

TCE made some adjustment to the three RWJF program objectives. In addition to senior students, TCE accepted General and Pediatric Dentistry residents to meet the average of sixty days in community-based facilities treating underserved patients. Twenty-five percent of the community sites had to be located in rural communities. Also, TCE required the California schools to cooperate in the development of a regional recruitment program for underrepresented and low-income students and a coordinated and comprehensive state and federal health policy agenda. The purpose of the policy effort is to sustain the community-based education and disadvantaged student recruitment programs after the Pipeline program ends and, more broadly, to reduce disparities in oral health.

The community experience is expected to have an immediate impact on increasing care to underserved patients. Senior students are able to see substantially more patients and provide more services in patient-centered, community delivery sites than in dental school clinics. Instead of seeing approximately two patients per day in school clinics, students treat six to eight patients per day in community clinics and practices. The community sites are more productive because students work with dental assistants and community dentists supervise only one or two students as they continue to treat their own patients. With respect to the goal of the Pipeline program, if senior students from all fifty-six dental schools spent sixty days a year providing care in community-based clinics and practices, they would provide approximately 2.2 million patient visits and treat about 1.4 million patients annually (56 schools x 85 seniors/school x 60 days x 8 patients/day = 2,284,800 visits/1.6 visits per patient = 1,400,000 patients). This is approximately the number of patients treated annually (in 2001) in community health centers supported by the Bureau of Primary Health Care, Health Services and Resources Administration.

A related issue is the potential impact of community experiences on the careers of nonminority students. Ideally, some students and residents will decide to work in safety net clinics; others will locate their practice in underserved areas; and more will treat underserved patients regardless of their practice locations. But studies of the impact of community experiences on medical and dental students’ career choices show mixed results. Therefore, this outcome was not a primary rationale for the community experience.
However, the impact of community experiences on the quality of dental education was a primary concern. Fortunately, several schools, such as the University of Colorado and the University of Michigan, had extensive experience with this model of education and reported positive results. Students were enthusiastic about their community experiences and reported that they gained self-confidence, technical skills, greater ability to work with allied dental personnel, and a better appreciation of the oral health problems of diverse patients and communities.14

A final consideration was the potential impact of community-based education on school finances. With serious financial problems, most schools could not sustain community-based education programs if they resulted in a net loss of revenues. The literature on community-based education provided little information on this important issue. However, based on discussion with several deans and financial officers, it was clear that community-based education programs had the potential to produce a net increase in school resources under several scenarios that are not mutually exclusive. Schools could 1) increase the number of students/residents enrolled without increasing clinic facilities; 2) use available dental chairs for second- or third-year students; 3) close unused clinics, reducing operating costs; and 4) negotiate reimbursement from community clinics or public agencies to cover their operating costs and loss of income.

Curriculum changes are necessary to prepare students for their community experiences. Of special importance, students must be culturally competent to treat a diverse group of patients. They should also have a basic understanding of clinical epidemiology, public health, and the behavioral management of patients. It is also critical that students are clinically competent in the basics of general dentistry before working in community clinics. These curriculum changes respond to the overall challenge of providing students with a greater understanding and skills to treat vulnerable populations.

The rationale for the recruitment of underrepresented minority and low-income students is based on the widely recognized need to diversify the dental profession. The literature indicates that these students are much more likely to practice in underserved communities than majority and more affluent students, respectively.5-8 Of equal importance, there is convincing evidence from medicine that patient compliance and satisfaction with care, two important quality of care measures, are improved when minority and low-income patients are treated by practitioners of the same cultural and linguistic background.15 Also, the recent Supreme Court decision assumes a diverse student body benefits all students.16

Program Budget, Staffing, and Management

The RWJF award was $19 million over six years. Of this amount, 20 percent ($4 million) was designated for the national program office (NPO) to administer the six-year project. The remaining amount was allocated to the eleven participating dental schools, averaging about $1.2 million per school over five years. The TCE award was for $6.9 million and went to the NPO at Columbia University. Of this amount, $4.8 million was regranted to four California dental schools and $500,000 was regranted to the American Dental Education Association (ADEA) to fund student financial aid at all five California dental schools. The remaining funds were used by the NPO for program management and technical assistance to the schools. The Kellogg Foundation provided $1.1 million in financial aid money for the RWJF-funded schools; these funds were also administered by ADEA. In total, $1.6 million was provided by Kellogg and TCE for financial aid.

The RWJF and TCE also funded an independent evaluation of the Pipeline program. Based on a national competition, Dr. Ronald Andersen, in the School of Public Health, University of California, Los Angeles, was selected to head the evaluation. The evaluation strategy and research methods are described in a companion paper that appears in this issue of the Journal of Dental Education.17

As far as staffing, the Pipeline program is unusual in having two co-directors, Allan Formicola and Howard Bailit. The foundation supported this arrangement because these two people had worked together for several years on the Macy project and brought complementary skills to the project.

The NPO was based at Columbia University in the Center for Community Health Care, and project staff were located at both Columbia (Formicola) and the University of Connecticut Health Center (Bailit). Other key staff included Kim D’Abreu Herbert, Deputy Director, Sally Jett, Program Coordinator,
Tamara Cannon, Communications Coordinator, Raquel Munoz, Administrative Coordinator, and Sandra Foley, Financial Officer.

The primary activities of the NPO are:

1. manage the call for proposal and other processes used to select the schools to participate in the Pipeline program;
2. maintain communications with key stakeholder organizations (e.g., ADEA, ADA, National Dental Association, Society of American Indian Dentists, Hispanic Dental Association, Health Resources Service Administration, NIDCR);
3. provide technical support to participating schools;
4. monitor the performance of participating schools;
5. convene a national meeting of participating schools annually;
6. convene a regional meeting of participating California schools annually;
7. report on program activities to the RWJF and TCE;
8. convene periodic meetings of the National Advisory Committee;
9. work with the National Evaluation Team (NET) in coordinating activities between the NPO and NET; and
10. develop and maintain a website that fosters communication among participating schools and the larger educational, practice, and public communities and provide resources for people and organizations interested in access disparities.

The RWJF appointed a National Advisory Committee to provide the Foundation and the NPO advice on the Pipeline program. Committee members were selected because of their diverse knowledge of oral health disparities and their leadership positions in major stakeholder organizations. The committee is chaired by Dr. Caswell Evans, a public health dentist who directed the preparation of the Surgeon General’s report on oral health. The members of the committee and their affiliations are presented in Table 1. The committee met several times in the first year to select schools for the program. In succeeding years, communications with the committee was through conference calls, meetings, and site visits to participating schools.

The program followed standard RWJF procedures to select participating schools. First, a call for proposals was issued soliciting letters of intent from all accredited dental schools in the United States and Puerto Rico. Forty-two dental schools submitted letters of intent. The National Advisory Committee reviewed the letters and invited twenty-one schools to submit full applications. Nineteen schools completed applications, and sixteen schools were site-visited. Table 2 lists the eleven schools selected by the committee to receive awards. The selection criteria included the quality of the applications and distribu-

| Charles Alexander | Ph.D. | Associate Dean for Student Affairs and Admissions, University of California, San Francisco |
| Robert Anderton | D.D.S., J.D. | Private Practitioner and Past President of the American Dental Association |
| William Dodge | D.D.S. | Vice Dean, University of Texas at San Antonio |
| Caswell Evans, Jr. | D.D.S., M.P.H. | Director, National Oral Health Initiatives, Office of the Surgeon General, National Institute of Dental and Craniofacial Research, National Institutes of Health. As of September 2004: Associate Dean for Prevention and Public Health Sciences and Director, Center for Prevention and Oral Public Health Sciences, University of Illinois at Chicago |
| A. Isabel Garcia | D.D.S., M.P.H. | National Institute for Dental and Craniofacial Research, National Institutes of Health |
| Ernest Garcia, Jr. | D.D.S. | Private Practitioner and President, Hispanic Dental Society |
| George Jenkins | D.M.D. | Director, Office of Multicultural Affairs, Department of Community Health, University of Medicine and Dentistry/New Jersey |
| Julia Lear | Ph.D. | Director, Center for Health and Health Care in Schools, George Washington University |
| Kimberly McFarland | D.D.S., M.H.S.A. | Dental Health Director, Nebraska Health and Human Services System |
| Edward Scott II | D.M.D. | Private Practitioner and President, National Dental Association |
| Jerry Tahsequah | | Associate Director, Native American Center of Excellence, University of Oklahoma Health Sciences Center |
| Richard Valachovic | D.M.D., M.P.H. | Executive Director, American Dental Education Association |
tional equity with respect to regional, public/private, and minority/nonminority variation among schools.

The selection of the four California schools funded by TCE was based on the quality of their applications and site visits. These schools are also included in Table 2.

For the RWJF award, the first year (2001-02) of the six-year project was spent establishing the NPO office at Columbia University and providing staff support for the National Advisory Committee in selecting schools to participate in the program. Once selected, the schools were given twelve months to plan for the implementation of the project (2002-03). This involved making changes in the curriculum and securing faculty governance approval, establishing partnerships with community clinics and practices for student rotations, and developing or expanding programs for recruiting underrepresented and low-income students. The implementation phase of the Pipeline program began in July 2003.

For the four schools funded by TCE, the planning period was shortened to six months (July 2003 to December 2003), and implementation began in January 2004. The California schools were fully integrated operationally with the eleven other schools starting in July 2004.

All fifteen schools have four years (July 2003 to June 2007) to implement their programs and reach Pipeline objectives.

Conclusions

The Pipeline program is an important opportunity for the dental education and practice communities to address three critical problems: providing disadvantaged populations better access to dental care, increasing the diversity of the dental workforce, and giving senior students and residents clinical experiences in patient-centered community delivery sites. Because of the generous support of three large foundations, resources were available to fund project participation by fifteen schools—which represents approximately a third of schools nationally. This is a critical mass of dental schools in a large-scale effort to make the results of the Pipeline project relevant to all dental schools. The challenge now is to demonstrate that the Pipeline objectives are achievable and that the program is sustainable without external support.

Table 2. Universities with dental schools participating in the pipeline program

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