The Dental Pipeline Program Evaluation: Findings, Best Practices, and Future Directions for Community-Based Dental Education
ADEA Symposium
March 16, 2009
Structure of the Dental Pipeline Project

Funders
Robert Wood Johnson Foundation (RWJF)
  Laura Leviton, Ph.D., Proj. Off.
The California Endowment (TCE)
  Diane Manuel, Ph.D., Proj. Off.
  Ignatius Bau, L.L.D., J.D., Prog. Dir.

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  Pamela Davidson, Ph.D., Co-PI
  and Project Director

National Program Office
Howard Bailit, D.D.S., Ph.D., CoPI
Allan Formicola, D.D.S., M.S., CoPI
Kim D’Abreu, M.P.H., Deputy Director
Structure of the Dental Pipeline Project

**RWJF Dental School Grantees**

Boston University, Goldman School of Dental Medicine  
   Ana Karina Mascarenhas, PI  
   Jedediah Horwitt, Liaison  
Howard University, College of Dentistry  
   Donna Grant-Mills, PI  
   Garnett Henley, MS, Liaison  
Meharry Medical College, School of Dentistry  
   Cherae Farmer-Dixon, PI  
   Paula Yarbrough, Liaison  
The Ohio State University, College of Dentistry  
   Canise Bean, PI  
   Rachel VanSickle, Liaison  
University of Washington, School of Dentistry  
   Douglass Jackson, PI  
   Memory Brock, Liaison  
University of North Carolina, School of Dentistry  
   Ronald Strauss, PI  
   Jeff Edwards, Liaison  
University of Connecticut, School of Dental Medicine  
   Cynthia Hodge, PI  
   Robin Washington, Liaison  
University of Illinois at Chicago, College of Dentistry  
   Caswell Evans, PI  
   Khatija Noorullah, Liaison  

Temple University, School of Dentistry  
   Ivan Lugo, PI  
   Shawn Campbell, Liaison  
West Virginia University, School of Dentistry  
   Shelia Price, PI  

**TCE Dental School Grantees**

USC School of Dentistry  
   Roseann Mulligan, PI  
   Niel Nathason, Co-PI  
   Carol Parker, Liaison  
UCSF School of Dentistry*  
   William Bird, PI  
   Dorothy Perry, Liaison  
Loma Linda University, School of Dentistry  
   Charles Goodacre, PI  
   Margie Arnett, Liaison  
UCLA School of Dentistry  
   Marvin Marcus, PI  
   Carl Maida, Liaison  
UOP Arthur A. Dugoni School of Dentistry  
   Paul Glassman, PI  
   Mari Okamura, Liaison  

*UCSF funded by both RWJF & TCE
Structure of the NET Evaluation

Recruitment & Retention
Ronald Andersen, Ph.D.
Judith-Ann Friedman, Ed.D.

Curriculum
Edmond Hewlett, D.D.S.
Pamela Davidson, Ph.D.

Clinical Services
Kathryn Atchison, D.D.S., M.P.H.
Amardeep Thind, M.D., Ph.D.

Practice Plans
Pamela Davidson, Ph.D.
Daisy Carreon, M.P.H.

Sustainability
Amardeep Thind, M.D., Ph.D.
Kathryn Atchison, D.D.S., M.P.H.

Health Policy
Jim Crall, D.D.S., Sc.D.

Consultants
Abdelmonem A. Afifi, Ph. D.
Helen Gift, Ph.D.

Research Staff
John Gutierrez, B.A.
Terry Nakazono, M.A.
Daisy Carreon, M.P.H.
Jia Bai, B.A.

External Reviewers
Marilyn Woolfolk, D.D.S., M.P.H.
Raymond Kuthy, D.D.S., M.P.H.
Symposium Agenda

Part I Describing the Program and its Evaluation

• Pipeline Program – Howard Bailit (9 min.)
• Evaluation Methods & Design – Pamela Davidson (9 min.)
• Discussion (14 min.)
Symposium Agenda

Part II  Findings and Best Practices

• Recruitment – Ron Andersen (9 min.)
• Curriculum – Ed Hewlett (9 min.)
• Clinical Services – Kathy Atchison (9 min.)
• Discussion (14 min.)
Symposium Agenda

Part III  The Future

• Practice Plans – Daisy Carreon (9 min.)
• Sustainability – Amardeep Thind (9 min.)
• Policy – Jim Crall (9 min.)
• Discussion (14 min.)
Pipeline Interventions:
National Program Office

Allan Formicola, Co-Director
Howard Bailit, Co-Director
Kim D’Abreu, Deputy Director
Judy Stavisky, RWJ F Program Officer, Phase 1
Denise Davis, RWJ F Program Officer, Phase 2
Ignatius Bau, TCE Program Director
Pipeline School Objectives

- Increase Time Seniors* Spend in Community Clinics Caring for Underserved Patients - 60 days
- Prepare Students to Care for Diverse, Underserved Patients
- Enroll More Underrepresented Minorities (URM)

*and residents in California
NPO Program Management

- **Direction**
  - Helped schools set operational objectives

- **Monitoring**
  - Assessed progress: site visits, conference calls, annual reports

- **Technical Assistance**
  - Organized national workshops, meetings
  - Sponsored consultants
  - Created collaborations
  - Encouraged use of best practices
Community-Based Dental Education/ Faculty Development

- Assisted Schools Meet Challenges
  - Faculty support
  - Course credit
  - Off-site rotations
  - Affiliation agreements
  - Calibration

- Commissioned Studies
  - Medicaid matching funds
  - California clinic capacity
  - Stakeholder perception
Student Development

- Organized Cultural Competency Workshops
- Provided Web-Based Resources
- Shared Best Practices
Facilitating URM Recruitment

- Enhanced URM Programs
- Established Collaborations
- Conducted Workshops, Meetings
- Piloted SMDEP and Dental Pipeline Connections Programs
- Partnered with Stakeholders
NPO Guiding Principles

- School Leadership
- Faculty and Student Buy-in
- Communications
- Commitment
Pipeline Leadership Team
Multimethod Longitudinal Evaluation of the Pipeline Program

Pamela Davidson
Terry Nakazono
Abdelmonem Afifi
John Gutierrez
Presentation Outline

I. Ingredients

II. Conceptual Framework

III. From Concept to Measurement

IV. NET Methods: Multiple Data Sources and Triangulation

V. Evaluation Design

VI. Multi-School Evaluations: Implications for Future Studies
Ingredients for National Evaluation

- National Evaluation Team (NET) composed of interdisciplinary investigators:
  - Dentistry
  - Medical sociology
  - Health services policy and management
  - Health program evaluation
  - Statistical methods
  - Project management and research staff
  - Consultation from Qualitative researchers/ software vendors
  - Technical advice from National Program Office (NPO)
  - Guidance from Foundation Officers

- Evaluation Conceptual Framework
Evaluation Conceptual Framework

**Inputs**
- Contextual Environment
  - Policy
  - Delivery System
  - University & School
  - Population Characteristics
- Stakeholders
  - TCE
  - RWJF
  - NPO
  - Dental Associations
  - Student Panels
  - Faculty
  - Dentists
  - Allied Health Professionals
  - Underserved Communities

**Pipeline Intervention**
- Grants to schools
- Statewide Recruitment & Health Policy Collaborative Committees

**INDIVIDUAL SCHOOL CHANGES**

**Structure → Process → Intermediate Outcome**

**Under Represented Minority & Low-Income (URM/LI) Recruitment**
- Comprehensive Plan for Diversity
- Number faculty/staff involved
- Partners for recruitment
- Budget for recruitment
- Tutor/retention practices
- Number visits to schools
- Number applying
- Contact with partners
- Cooperative activity of regional Pipeline schools
- Number minorities accepted
- Number minorities enrolled
- Number minorities graduated
- Satisfaction of graduates

**Revisions to the Curriculum**
- Number of didactic courses
- Number of practical courses
- Number of elective courses
- Learning outcomes
- Number & Type of Faculty
- Revisions to the curriculum
- Instructional methods used
- Number applying
- Student evaluations of courses and faculty
- Curriculum Committee
- Stakeholder satisfaction
- Competency objectives for public health dentistry

**Extramural Clinical Rotations**
- Number of extramural clinical sites
- Rural/urban distribution of sites
- Credit for procedures
- Number of FTE community preceptors
- Ave number of days/student
- Ave number of rotations sites/student
- Time devoted to instruction
- Offered calibration events
- Number of preventative & treatment services
- Stakeholder satisfaction
- Financial implications
- Practice setting selected by recent graduates

**Net Feedback Reports**

**NPO Coaching & Technical Assistance**

**Long-term Outcome**
- Practice Plans
- Sustainability
- Dental Care Access
Simplified Framework

**INPUTS**
- Contextual Environment
- Stakeholders

**PIPELINE INTERVENTION**

**INDIVIDUAL SCHOOL CHANGES**

- **STRUCTURE**
- **PROCESS**
- **INTERMEDIATE OUTCOME**

1. Under Represented Minority & Low-Income (URM/LI) Recruitment
2. Curricular Revisions
3. Extramural Clinical Rotations

**LONG TERM OUTCOME**
- Practice Plans
- Sustain ability
- Dental Care Access

**NET Feedback Reports**
**NPO Coaching & Technical Assistance**
From Concept to Measurement

- **“Stakeholders”**
  - Individuals, groups, or organizations that have a significant interest in how well a program performs

- **Multiple Data Sources**
  - Captured perspective of multiple stakeholder groups
  - Used existing or created new data
  - Quantitative and qualitative
  - More or less reliable
  - Sometimes political and controversial
# NET Data Sources

<table>
<thead>
<tr>
<th>School Visits</th>
<th>School Reports</th>
<th>Surveys</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Individual and Group Interviews</td>
<td>• CBDE Curriculum Course Reporting</td>
<td>• ADEA Survey of Dental School Seniors</td>
</tr>
<tr>
<td>• Recorded and transcribed</td>
<td>• Clinical Information System</td>
<td>• ADA Annual Survey</td>
</tr>
<tr>
<td>• 18 stakeholders</td>
<td>• Faculty Survey</td>
<td>• Contextual Variables (HRSA, Census, etc,)</td>
</tr>
<tr>
<td>• Case studies</td>
<td>• Financial Reports</td>
<td></td>
</tr>
<tr>
<td>• Cross-site analysis</td>
<td>• Health Policy Survey</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Implementation Reports</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Syllabi Collection</td>
<td></td>
</tr>
</tbody>
</table>

NET Methods
Multiple data sources and Triangulation

- Site visits
- Surveys
- School reports
# Evaluation Design

## Multiple Case Studies (n=14)

<table>
<thead>
<tr>
<th></th>
<th>2002-03</th>
<th>2003</th>
<th>2004-05</th>
<th>2006-07</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>X</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

*Depending on the data source

## Trend Analysis (n=14 to 52*)

<table>
<thead>
<tr>
<th></th>
<th>2002-03</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>X</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

*52 Schools in the ADEA Senior Survey were analyzed including 3,697 students in 2002-03 and 3,841 students in 2006-07.

## Quasi-Experimental (n=52**)

<table>
<thead>
<tr>
<th>Category</th>
<th>2002-03</th>
<th>2003</th>
<th>2006-07</th>
</tr>
</thead>
<tbody>
<tr>
<td>RWJF</td>
<td>0</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>TCE</td>
<td>0</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Non-Pipeline</td>
<td>0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Multi-School Evaluations
Implications for Future Studies

• Strong technical assistance required to develop uniform data sources/definitions
  – Need enthusiastic school buy-in
  – Provide resources for evaluation support
  – Provide specific instructions and definitions to the school

• Best practices, lessons learned
  – Triangulation helpful in understanding differences in stakeholder perceptions
  – Build in triangulation prospectively
  – Requires comparable wording of questions in data sources and stakeholder groups

• From past to future Pipeline programs
  – Pipeline I: RWJF let 1000 flowers bloom
  – Pipeline II: Select program components with greatest potential impact (context matters)
  – More focus on the system barriers and facilitators in future programs
Discussion

(14 minutes)
URM RECRUITMENT

R. Andersen, J. Friedman,
D. Carreon, J. Bai, T. Nakazono,
A. Afifi, J. Gutierrez
INCREASE IN URM APPLICANTS IN PIPELINE SCHOOLS

Sources: Data from Pipeline schools’ Implementation Reports for 2003 through 2007
INCREASE IN URM ENROLLEES IN PIPELINE SCHOOLS

Sources: Data from Pipeline schools’ Implementation Reports for 2003 through 2007
INCREASE IN URM APPLICANTS BY MINORITY STATUS

Sources: Data from Pipeline schools’ Implementation Reports for 2003 through 2007
INCREASE IN URM ENROLLEES BY MINORITY STATUS

Sources: Data from Pipeline schools’ Implementation Reports for 2003 through 2007
INCREASE IN PERCENT OF URM ENROLLEES

Sources: Data from Pipeline schools’ Implementation Reports for 2003 through 2007
FRAMEWORK FOR EVALUATING THE EFFECT OF PIPELINE ON URM RECRUITMENT

**Community Characteristics**

- **Policy**
  - Adult Medicaid dental benefits 2003
  - % URM legislative members 2003

- **Population Characteristics**
  - % URM 2000
  - % Black 2000
  - % Hispanic 2000
  - % Asian/Pacific Islander 2000
  - % Low Income (<200% FPL) 2000
  - % Foreign born 2000
  - % Education less than high school 2000

- **Delivery System**
  - Urban/Rural 2000
  - Dentist-to-population ratio 2001

**Dental School Characteristics**

- **Ownership, 2003**

- **Mission Statement, 2004**
  - Commitment to recruit URM
  - Commitment to provide care to URM

- **Educational Costs, 1998-99 & 2002-03**
  - First year resident tuition
  - Total financial aid awarded
  - First year total costs

- % URM Clinical Faculty 1998-99 & 2002-03

**Pipeline Status of School**

- California Pipeline
- National Pipeline
- Non-Pipeline

**Outcomes 2002-03 & 2006-07**

- URM dental school senior
  - Yes = 1
  - No = 0

- Hispanic dental school senior
- African American dental school senior
Change in URM senior enrollment for Pipeline compared to non-Pipeline schools (from 2003-2007)†

<table>
<thead>
<tr>
<th>Models</th>
<th>Effect of Pipeline</th>
</tr>
</thead>
<tbody>
<tr>
<td>All URM</td>
<td>1.81**</td>
</tr>
<tr>
<td>Hispanic</td>
<td>1.06</td>
</tr>
<tr>
<td>African American</td>
<td>3.65***</td>
</tr>
</tbody>
</table>

**P<.01
***P<.001

†Multivariable analysis of ADEA Senior Survey
Barriers to URM recruitment

• Rising tuition
• Limited recruiting resources
• Lack of a “critical mass” of URM faculty and students
Promoting URM recruitment

• Use of alumni, local dental societies, faculty
• Commitment of administration
• Collaboration of schools
• Increased financial aid
• Dedicated recruitment resources
• Increase in URM faculty
• Emphasize short Pipeline programs
CURRICULUM

Central Findings
Lessons Learned
Implications

E. Hewlett, P. Davidson, T. Nakazono, D. Carreon, J. Gutierrez, A. Afifi
Central Findings

• Personal reflection by dental students after clinical externships was widely viewed as valuable, if not essential.

• Increased use of creative and interactive learning methods was common.

• Faculty member(s) with behavioral or social science expertise to chair the CBDE curriculum committee was viewed as key.

• High self-perceived cultural competency among students.

• Importance of school environment in promoting acceptance of diversity.

• High variability in cultural competency of faculty.

Source: NET site visit interviews 2006-07
**Degrees held by CBDE course content chairs**

*(see handout)*

<table>
<thead>
<tr>
<th>Degree type(s)</th>
<th>Dental + Public Health or Social Science</th>
<th>Public Health</th>
<th>Social Science</th>
</tr>
</thead>
<tbody>
<tr>
<td># of course chairs w/this degree type</td>
<td>41</td>
<td>4</td>
<td>26</td>
</tr>
</tbody>
</table>

These account for **65%** of CBDE course chairs
Perceived Curriculum Effectiveness in Preparing Students in Cultural Competency

Data Source: NET Final Site Visits to Pipeline Schools 2006-07
Preparedness to care for diverse groups as a function of contextual and student characteristics

(see handout)

<table>
<thead>
<tr>
<th>Contextual Variables</th>
<th>OR</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean score: School environment promotes acceptance and respect</td>
<td>2.91**</td>
<td>1.36-6.22</td>
</tr>
</tbody>
</table>
% faculty agree/strongly agree school environment promotes acceptance/respect of different cultures

Source: Faculty Survey 2004, 2006
Lessons Learned

• Faculty-intensive methods of content delivery presented major challenges.

• Administrative support → sustainability of curricular revisions

• Effectiveness of experiential vs. didactic learning

• Stand-alone CBDE courses vs. integration of content
Lessons Learned

• Benefits of behavioral science faculty in clinic for critical learning moments

• Importance of reflection

• Involvement of students in developing/presenting culture and diversity content

• Need to recruit/retain faculty with behavioral science expertise
Implications

• Improved curriculum outcomes assessment

• Structured assessment of communicative competence

• Cultural competency training for faculty

• Distance learning for remote external rotation sites
CLINICAL SERVICES

Kathryn A. Atchison
Amardeep Thind
Ronald Andersen
Terry Nakazono
John Gutierrez
Number of Senior Student Extramural Rotation Days at Baseline and Completion of the Pipeline Program

Data Source: Implementation Reports (2003, 2007); 15 schools reporting
WVU data only included for 2003-05 due to termination of CIS data collection in 2005
Number of senior student and resident days at baseline and completion of the Pipeline program

<table>
<thead>
<tr>
<th>Year</th>
<th>Senior Rotation Days</th>
<th>Resident Rotation Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002-03</td>
<td>16</td>
<td>185</td>
</tr>
<tr>
<td>2003-04</td>
<td>20</td>
<td>185</td>
</tr>
<tr>
<td>2004-05</td>
<td>29</td>
<td>163</td>
</tr>
<tr>
<td>2005-06</td>
<td>34</td>
<td>194</td>
</tr>
<tr>
<td>2006-07</td>
<td>39</td>
<td>198</td>
</tr>
</tbody>
</table>

Sources: Data from Pipeline schools’ Implementation Reports for 2003 through 2007; resident data provided by four schools. For West Virginia University, the 2003-05 data is used due to termination of CIS data collection in 2005.
## Number and type of extramural facilities, by year

<table>
<thead>
<tr>
<th>Facility Type</th>
<th>2002-03</th>
<th>2006-07</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>Number</td>
</tr>
<tr>
<td>FQHC</td>
<td>28</td>
<td>76</td>
</tr>
<tr>
<td>Other Comm. Health Center</td>
<td>33</td>
<td>44</td>
</tr>
<tr>
<td>Community Hospital</td>
<td>25</td>
<td>38</td>
</tr>
<tr>
<td>VA Hospital, 12-Armed Forces</td>
<td>22</td>
<td>20</td>
</tr>
<tr>
<td>Prison or Jail</td>
<td>9</td>
<td>7</td>
</tr>
<tr>
<td>Public/Parochial School</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>School Owned/Managed, Mobile, Other School Clinic</td>
<td>33</td>
<td>34</td>
</tr>
<tr>
<td>Indian Health Service</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>State, County, Municipal Health Department</td>
<td>10</td>
<td>19</td>
</tr>
<tr>
<td>Nursing Home</td>
<td>10</td>
<td>14</td>
</tr>
<tr>
<td>Private Practice</td>
<td>29</td>
<td>58</td>
</tr>
<tr>
<td>Other (Geriatric; Private Residence)</td>
<td>--</td>
<td>19</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>204</strong></td>
<td><strong>344</strong></td>
</tr>
</tbody>
</table>
Number and type of patients seen in 2006 by students in 13 Pipeline extramural rotations

<table>
<thead>
<tr>
<th>Facility Type</th>
<th>n</th>
<th>TOTAL (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>23,417</td>
<td>37</td>
</tr>
<tr>
<td>African American</td>
<td>13,436</td>
<td>21</td>
</tr>
<tr>
<td>Hispanic</td>
<td>20,796</td>
<td>33</td>
</tr>
<tr>
<td>Native American</td>
<td>2,783</td>
<td>4</td>
</tr>
<tr>
<td>API</td>
<td>3,495</td>
<td>5</td>
</tr>
<tr>
<td>Other</td>
<td>1,442</td>
<td></td>
</tr>
<tr>
<td>Unknown</td>
<td>3,267</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>68,636</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Source: Data collected from clinical information system (CIS) July 1, 2005, through June 30, 2006.
Number and Type of Extramural Sites for Private and Public Pipeline Program Schools, 2006-07

Private (n=6)

Public (n=9)

Private Schools # facilities 87

Public Schools # facilities 257

Mean: 14.5

Mean: 28.6

Sources: Data from Pipeline schools’ Implementation Reports for 2006-07, for all schools except West Virginia University (WVU). Due to termination of CIS data collection at WVU in May 2005, no further data were reported on subsequent Implementation Reports. Therefore, the data here reflect WVU’s 2004-05 extramural facility data.
Dental services provided by senior students during extramural rotations in FY05-06

<table>
<thead>
<tr>
<th>Service Type (by CDT codes)</th>
<th>Number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagnostic Services</td>
<td>31,331</td>
<td>24</td>
</tr>
<tr>
<td>Preventive Services</td>
<td>23,085</td>
<td>18</td>
</tr>
<tr>
<td>Restorative - Operative And Prosthodontic</td>
<td>39,739</td>
<td>31</td>
</tr>
<tr>
<td>Endodontics</td>
<td>3,189</td>
<td>2</td>
</tr>
<tr>
<td>Periodontics</td>
<td>4,327</td>
<td>3</td>
</tr>
<tr>
<td>Removable Prosthodontics</td>
<td>5,523</td>
<td>4</td>
</tr>
<tr>
<td>Implant Services</td>
<td>53</td>
<td>0</td>
</tr>
<tr>
<td>Fixed Prosthodontics</td>
<td>604</td>
<td>1</td>
</tr>
<tr>
<td>Oral Surgery</td>
<td>15,985</td>
<td>12</td>
</tr>
<tr>
<td>Orthodontic Services</td>
<td>26</td>
<td>0</td>
</tr>
<tr>
<td>Adjunct General Services</td>
<td>4,790</td>
<td>4</td>
</tr>
<tr>
<td>Other</td>
<td>284</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>128,936</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Source: Data collected from clinical information system (CIS) July 1, 2005, through June 30, 2006.
Predictors of a higher extramural rotation impact score for senior dental students: Multivariate multilevel analyses

| Contextual Environment | • Medicaid / Limited (-)  
|                        | • Medicaid / Full (-)    |
| School level variable  | • School’s cultural environment promotes acceptance and respect (+) |
| Students               | • Number of rotation weeks student is expected to serve in senior year (+)  
|                        | • Student’s service orientation (+)  
|                        | • Student’s Professional Responsibility score (+) |
Lessons Learned: Moving clinical education to the community was a challenging process

• Academic issues: Faculty and Administrative support were key
  – Credentialing and calibration of extramural faculty
  – Community engagement
  – Developing affiliate sites

• Financially:
  – Loss of revenue
  – Cost to offer rotations
  – Mission creep: will they lose support from current supporters (donors, legislature)

• Logistically:
  – Restructuring a curriculum takes enormous faculty, leadership, and student buy-in
  – Housing and transportation are key for sites far from campus
  – Rotation scheduling can be challenging
  – Maintaining patient continuity of care
  – Students need incentives: credit to participate, mentoring from clinicians, valuable experiences
Implications

- Community Clinical experiences can work for any school
- Schools must select the appropriate model
- Students and faculty perceive value to ER
- Variety in rotations can serve many different student needs
- School constituents are an important resource, supporter, facilitator
Discussion

(14 minutes)
When you enter practice, about what percent of your patients do you expect will be from underserved racial/ethnic populations?

Percent of students expecting to serve 25% or more underserved patients

Source: Data from ADEA Survey of Dental School Seniors 2007
Are students planning to provide care to more underserved patients as a result of the Pipeline program?

Source: Data from ADEA Surveys of Dental School Seniors, 2003 and 2007
What factors influence a student’s decision to provide care to more underserved patients?

Student characteristics

– Female gender***
– Older age*
– URM*** and Asian/PI***
– Not married***
– From lower-income family***
– High service*** and socially conscious orientation***
– Less entrepreneurial attitudes**

*p<.05; **p<.01; ***p<.001
Other significant factors influencing a student’s decision

CBDE characteristics
- Time devoted to cultural competency was inadequate**
- Less prepared for providing oral health care to diverse populations***
- Extramural clinical rotations influenced practice location plans***

Community characteristics
- State has no adult Medicaid coverage*
- Higher low-income population in county**
- High URM population in county**

*p<.05; **p<.01; ***p<.001
Facilitators for students to practice in underserved settings

- Sufficient financial support
- Enhanced communication and interaction with community
- Self-motivation to work with the underserved
- Students from rural/underserved areas
- Exposure to practice in underserved area
- Workforce role models in CHC or rural settings

Source: Data from NET Final Site Visits to Pipeline schools, 2005 to 2007
Barriers for students to practice in underserved settings

- High educational debt
- Low compensation by safety net organizations
- Limitations in government funding for loan forgiveness programs
- Personal preferences and beliefs regarding practicing in urban rather than rural settings

Source: Data from NET Final Site Visits to Pipeline schools, 2005 to 2007
Practice Plans Conclusions

- Select students predisposed to provide care for underserved populations
- Continue to develop and sustain CBDE
- Increase opportunities to learn about practicing in underserved areas
- Address financial barriers that discourage graduates from providing care to underserved patients
Sustainability

Amardeep Thind, Kathryn Atchison, Terry Nakazono, John Gutierrez, Daisy Carreon, Jia Bai
Sustainability of Pipeline components

• Salient findings

• Lessons learned

• Symbols used:
  – Sustainable ✓
  – Possibly sustainable ±
  – Not sustainable ×
Recruitment changes

• To Maintain current numbers ✓
  – Strong buy-in from administration, faculty
  – Programs woven into existing school programs
    • Prevent loss of institutional memory when key personnel leave

• To increase URM students #’s in future ±
  – Financial – scholarship $, recruiting staff
  – Limited pool of candidates – students & faculty
Faculty agreeing with statement “recruitment of URM/LI students should continue as an integral part of the dental school's mission”

- **Agree/strongly agree**: 87%
- **Disagree/strongly disagree**: 4%
- **Don't know**: 9%

Source: Faculty survey, 2006
Faculty perceptions of administration (or other faculty) support for URM/LI recruitment programs

- Faculty support: 50% Positive/Very positive, 22% Neutral, 28% Negative/Very Negative
- Administration support: 61% Positive/Very positive, 12% Neutral, 27% Negative/Very Negative

Source: Faculty survey, 2006
Curriculum

• Maintain current changes  √
  – Changes fully incorporated into curriculum
  – Are essential part of curriculum

• Additional changes in near future  ×
  – Lack of available time
  – Faculty shortage
Rotations

• Maintain current days √ √
  – “it has become an integral part of the curriculum”
  – “it has become part of the school’s identity”

• Increase days ×
  – Fiscal health of sites
Faculty members agreeing with statement that........

- The extramural clinical rotation program should continue as an integral part of the school's clinical education: 84%
  - Agree/strongly agree: 84%
  - Disagree/strongly disagree: 5%
  - Don't know: 11%

- The school of dentistry has sufficient resources to sustain the extramural clinical rotation program: 45%
  - Agree/strongly agree: 45%
  - Disagree/strongly disagree: 21%
  - Don't know: 34%

Source: Faculty survey, 2006
## Barriers to sustaining Pipeline objectives: reported by faculty

<table>
<thead>
<tr>
<th>Recruitment</th>
<th>Curriculum</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Lack of scholarships - 85%</td>
<td>• Insufficient faculty interest - 53%</td>
</tr>
<tr>
<td>• Lack of qualified URM applicants – 79%</td>
<td>• Insufficient faculty expertise - 53%</td>
</tr>
<tr>
<td>• Lack of staff – 63%</td>
<td>• Not compelled by accreditation standards - 45%</td>
</tr>
<tr>
<td>• Competition with other schools - 60%</td>
<td>• Lack of administrative support - 43%</td>
</tr>
<tr>
<td>• Lack of administrative support – 36%</td>
<td></td>
</tr>
</tbody>
</table>
### Barriers to sustaining Pipeline objectives: reported by faculty

| Rotations               | · Inadequate funding for extramural site - 69%
|                        | · Calibration of extramural faculty - 61%
|                        | · Poor quality of supervision/training - 61%
|                        | · Lack of preceptors at extramural site - 55%
|                        | · Continuity of care for school patients - 51%
|                        | · Low involvement of school faculty - 51%
|                        | · Difficulty integrating with existing curriculum - 50%
|                        | · Lack of administrative support - 38% |
### Multivariate Multilevel Analyses: Predictors of Fewer Barriers

| URM Recruitment | • More administrative support for URM/LI recruitment  
|                 | • Greater effectiveness of URM/LI recruitment program  
|                 | • Disagree that URM/LI recruitment should continue as part of school’s mission  
|                 | • National Pipeline schools |
| CBDE Curriculum | • White faculty  
|                 | • Part time faculty  
|                 | • Agree that didactic curriculum prepares students to work in community |
| Rotations       | • White faculty  
|                 | • Extramural faculty  
|                 | • Agree that school has sufficient resources to sustain rotations  
|                 | • Agree that school has culture emphasizing community service  
|                 | • National Pipeline schools |
Facilitating sustainability of Pipeline objectives

• Recruiting URMs
  – Linkages – NDA, HDA, HBCUs, feeder schools
  – ↑ alumni involvement
  – Predental clubs, UG courses as exposure
  – Expanding admissions criteria
• Outcome validates curriculum change
  – Board scores, graduation rates, student and faculty feedback
• Sustaining rotations
  – Build costs in school budgets
  – Formalize rotations as a course
  – Emphasizing community service
Health Policy

Jim Crall, Pamela Davidson,
Terry Nakazono, John Gutierrez,
Jia Bai, Ron Andersen
Rationale for Health Policy Evaluation

- Explicit component of TCE funding
- Important to address the external environment into which graduates emerge
  - Otherwise, limited impact and/or sustainability of education program interventions
  - Policy changes often necessary to change external environment
- Value in assessing public policy perceptions of leaders in dental education
Policy Data Sources

– TCE Health Policy Committee minutes

– Pipeline schools site visits

– Pipeline schools implementation reports

– Pipeline deans health policy survey

– Additional data available to the NET

  e.g., ADEA surveys, NET faculty surveys, contextual variables
TCE Health Policy Committee

- Forum for discussions of policy issues concerning dental education and Pipeline goals
- Conducted a survey to assess capacity of California dental safety net facilities
- Helped identify policy issues related to the Pipeline program and develop policy recommendations for CA Pipeline II
- Had limited direct impact on state or federal policies
Pipeline Schools Site Visit Interviews

- Views of deans and Pipeline P.I.s regarding important policy issues
- Variation across schools in perceived involvement in state/national policy
- Primary activity involved state legislative advocacy (80%) focused on:
  - Access to care
  - Licensure
  - Student financial aid or loan repayment
  - Postgraduate education requirements
- Advocacy involve equally divided among administrators, faculty and school-wide efforts
- Minimal perceived Pipeline impact
Pipeline Deans Survey (1)
(5 CA / 5 National)

– Important state and national policy issues
  - Adequate numbers of qualified faculty
  - Controlling pre-doctoral program costs
  - Increasing dental workforce diversity
  - Loan forgiveness

– Policy efforts perceived most effective with respect to:
  - Workforce diversity
  - Adequate numbers of qualified faculty
  - Loan forgiveness
  - Licensure
  - Pre-doctoral program costs
  - Financing residency programs
Pipeline Deans Survey (2)  
(5 CA / 5 National)

– Perceived barriers to policy development

- Lack of public commitment to financing dental education
- Failure to regard oral health as a priority
- Lack of knowledge on the part of policymakers about dental issues
- Negative perceptions about dentistry and dental professionals
Attitudes toward Mandatory PGY-1

ADEA Senior Survey (2003 & 2007)
- 30% agreed graduates should complete PGY-1
- No significant difference by Pipeline status
- Significant differences by student characteristics and CBDE; more likely to support mandatory PGY-1 if:
  - Female, URM, lower parental income, school retention program, higher community service and social consciousness
  - Believed: inadequate time for cultural competency, less prepared to care for diverse groups, and extramural experience influenced practice plans

NET Faculty Survey (2006)
- 70% felt graduates should complete PGY-1
- Supported PGY-1 if they believed
  - State would require PGY-1
  - PGY-1 would address access problems
Lessons Learned

- Rising cost of dental education is a major issue
  - Potential impediment to workforce diversification
  - Indebtedness may deter care for the underserved

- Varying opinions concerning challenges in recruiting qualified faculty

- Licensure & PGY-1
  - Faculty largely support mandatory PGY-1, but graduating students largely do not
Health Policy: Implications

- Growing interest in linking dental schools and community clinics
  - CA demonstration project

- Dental school financial constraints and ‘push’ to increase enrollment may create incentives for more community-based education

- Possible HRSA role to support dental school-community clinic partnerships
Discussion

(14 minutes)