The Future of Dental Education and Practice: Vision 2030
A Relevant, Sustainable Construct

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I have no disclosures and I am not speaking for any organization

Future focus

• “the future is here, it just isn’t evenly distributed”

• “If you are the same educator or oral health professional you were 10 years ago, then you have wasted 10 years”
Vision 2030:
Sustainable, relevant, dental education and practice

• This presentation will focus on the emerging changes in health care, health science education, society, and economics that will influence dental education and practice in 2030. Trends to discuss will include interprofessional education and collaborative practice models, emerging workforce models including dental therapy, integrating oral health systems into health systems, medically necessary dental care, and value based approaches to oral health care including value based payment, education, incentives and public expectation.

Oral health today
What is oral health?

• Oral health is the optimal contribution of the structure and function of the oral cavity to the well being of the patient
What is the status of oral health in America?
David Satcher MD

• a “silent epidemic” of dental and oral diseases is affecting some population groups. This burden of disease restricts activities in school, work, and home, and often significantly diminishes the quality of life. Those who suffer the worst oral health are found among the poor of all ages, with poor children and poor older Americans particularly vulnerable. Members of racial and ethnic minority groups also experience a disproportionate level of oral health problems. Individuals who are medically compromised or who have disabilities are at greater risk for oral diseases, and, in turn, oral diseases further jeopardize their health.

The real status of oral health today

• The hidden epidemic is no longer hidden
• Societal changes in body image and ability to tolerate destructive disease
• Health disparities heightening
• The oral systemic link is real
• Persistent disease and declining demand for oral health services
• The now visible burden of untreated oral diseases
Dental Health: The most frequent unmet health need in children


Caries: An infectious disease

- 70-90% of children by the second grade
- Over 1 million lost school days each year due to odontalgia
- Developing pain behavior/subsequent drug use?
- The MOST common unmet health need
Changing face of caries

- Findings of a systematic review of 9 studies on root caries in older adults:
  - Overall root caries incidence = 23.7% per year
  - Overall root caries increment = 0.47 surfaces/year
  - Root + coronal increment = 1.31 surfaces/year
  - Caries rates in dentate elderly now exceed that in commercially insured children

Provided by Steve Shuman DDS
Catherine Saint Louis, New York Times

•, author of “In Nursing Homes, an Epidemic of Poor Dental Hygiene,” cites studies in several states that show the enormity of the problem.

• In Wisconsin, 31 percent of residents of 24 facilities had teeth broken down to the gums, with visible roots

Caries and head and neck infection

• Catastrophic potential
  • Airway obstruction
  • Sepsis
  • Necrotizing fasciitis
  • Cavernous sinus thrombosis
Oral health matters

• Premature low birth weight babies
• Myocardial Infarction
• Senile dementia
• Stroke
• Nutrition
• GERD

Stan Sachs: The Nun’s Study

Findings:
Dentate nuns with dental restorations (including amalgam fillings/silver/mercury) had the highest cognition.
Functional aspects of the oral cavity

• Gastrointestinal
  • Mastication, deglutition, digestion, swallowing

• Speech

• Airway/ventilation
  • Sleep, athletic performance

• Psychosocial/sexual/gender
  • Facial expression, appearance, visual communication

• Neurologic
  • Taste, somatosensory

Sleep Apnea

• CNS mediated

• Airway Obstructive

Dental facial analysis
Some Famous deaths complicated by oral diseases

- Pharaoh Ramses 1: jaw abcess
- Sigmund Freud: Oral Cancer
- Jean Harlow: wisdom tooth infection
- US Grant: infected tumor
Dental spending is an outlier on the down side

Graph E
Practicing Dentists by Primary Work Setting
Minnesota, 2009-2010
Figure 3
Percentage of Nonelderly Adults with a Dental Visit in the Past Year, by Income and Insurance Status, 2013

NOTE: Adults age 18-64. "Private" includes those with private dental benefits. Some state Medicaid programs provide limited or no dental benefits for adults. "Uninsured" includes those without private dental benefits or Medicaid coverage. "Uninsured" also includes people who have only Medicare, with or without supplemental coverage.


DENTAL EDUCATION TODAY

VISION 2030
THE 2018 ADEA ANNUAL SESSION & EXHIBITION
MARCH 17-20 | ORLANDO
Dental School Applicants and First-Time Enrollees, 2004-2013

Source: American Dental Education Association, U.S. Dental School Applicants and Enrollees, 2004-2013

Dental School Applicants by Gender, 2004-2013

Source: American Dental Education Association, U.S. Dental School Applicants and Enrollees, 2004-2013

Note: For multiple years, gender is not reported for those who chose "Do not wish to report" and thus the combined total will be less than what is reported for total applicants and enrollees.
### Dental School Seniors’ Intended Type of Private Practice, 2012 through 2014

![Bar chart](chart.png)

Source: American Dental Education Association, Survey of Dental School Seniors, 2014 Graduating Class

Note: Family Private Practice was not asked in 2012.

### Where Do They Go From Here?

**Intended professional activities and practice options, 2014 dental school graduating class**

<table>
<thead>
<tr>
<th>Intended Primary Professional Activity for New Dental School Graduates</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private Practice DENTIST</td>
<td>50.5%</td>
</tr>
<tr>
<td>Dental Graduate Student/Residents/Intern</td>
<td>33.8%</td>
</tr>
<tr>
<td>Uniformed Services DENTAL</td>
<td>4.8%</td>
</tr>
<tr>
<td>Federally Qualified Health Center</td>
<td>3.6%</td>
</tr>
<tr>
<td>Other Position Related to Dentistry</td>
<td>1.9%</td>
</tr>
<tr>
<td>Other Nonprofit Cln</td>
<td>1.3%</td>
</tr>
<tr>
<td>State or Local Government Employer</td>
<td>0.9%</td>
</tr>
<tr>
<td>Other Federal Service (e.g., VA)</td>
<td>0.7%</td>
</tr>
<tr>
<td>Other Type of Student</td>
<td>0.7%</td>
</tr>
<tr>
<td>USPHS Commissioned Corps</td>
<td>0.6%</td>
</tr>
<tr>
<td>Faculty/Staff Member at a Dental School</td>
<td>0.5%</td>
</tr>
<tr>
<td>Other Position Not Related to Dentistry</td>
<td>0.01%</td>
</tr>
</tbody>
</table>

**Intended Private Practice Type for New Dental School Graduates**

- Employed as a sole proprietor of an existing private practice
- Employed in a group practice that has multiple locations
- Employed in a group practice that has a single location
- Purchase an existing private practice as a partner
- Establish a new private practice
- Other

**Note:** Percentages may not add up to 100% due to rounding.

Source: American Dental Education Association, Survey of Dental School Seniors, 2014 Graduating Class
Dental Hygiene Graduates, 1990-2012

Source: American Dental Association, Health Policy Resources Center, Surveys of Dental Hygiene Education Programs.

Professionally Active Dentists per 100,000 U.S. Population, 1976–2030

Source: American Dental Association, Survey Center, Dental Workforce Model 2008–2030

Note: Numbers from 2010 to 2030 are projected.
Dental Education Today

• Dental students are not taught how to care for sick people. Dental students are not educated as part of health systems. This is unique in health science education.
• Biomedical education in dental schools is a diminishing component of education for dental students.
• Basic medical sciences once an average of 1600 hours of a 4000 hour curriculum is now about 600 hours on average
• Dental education is focused on performance of procedures sometimes at the expense of knowledge
• Exploration of new workforce models is occurring
This project is supported by the Health Resources and Services Administration (HRSA) of the U.S. Department of Health (HHS) Grant no. D8HP28496

Factors and Issues that Led to Formation of Taskforce

- Many new grads/new dentists end up practicing in different state/region than their dental school
Oral health care delivery tomorrow
HRSA reports moderate to severe shortage of DDS in 2050

Solomon, Dental Economics

• The U.S. Centers for Medicare and Medicaid Services predicts insurance as a source of dental expenditures will remain relatively stable at 51.0% up to 2023. They also estimate out-of-pocket expenditures will decline to 35.1% and government sources will increase to 13.9% of all dental expenditures by 2023. This projection estimates government expenditures for dental services more than doubling by 2023 to $26.7 billion. Historically, government expenditures for dental services have not increased at this rate.

What are the needs and opportunities to improve oral health?

- Access to care
  - Geographic and financial
- Integrated medical, dental health care delivery.
- Common education of health professionals
- Consumer directed health care
- Basic skill in primary medical/nursing/pharmacy care
  - Exam
  - Fluoride therapy
  - Nutrition and hygiene instruction

Community Based Education at UCSF
Asian Health Services among 14 sites
How change may occur in oral health

5 MEGATRENDS that will affect dentistry

- Societal Changes
- Governmental Change
- Technology
- Globalism
- Individual Leaders
James Burke
Connections

• Burke makes the very simple point that
Various seemingly minor inventions or historical events are connected and have a way of sending ripples outward, far beyond the narrow scope of the intial impact of the activity
Saturn booster ===Tang

Jared Diamond
Guns Germs and Steel

• Societies are successful when they are healthy
• Unchecked disease and decline in environment are the principle reasons societies decline and fall
Historical comparisons
Trench mouth === War and dental health

US soldier === healthy teeth
US Dental health not an accident: 
a product of dental education and dental engine.

Surgery in Hard Times 
December 2008 JOMS

OMS did not exist, could not exist in the 1930's and 1940's.
The economic model of today's OMS is a sociologic phenomenon
Racial and Ethnic Composition of the Resident Population of the United States, 2010-50

![Graph showing racial and ethnic composition trends from 2010 to 2050](image-url)

Source: Population Division, U.S. Census Bureau, Table 4. Projections of the Population by Sex, Race, and Hispanic Origin for the United States: 2010 to 2050 (NP2008-T4)

Awareness of inequality:
Political, Economic, Social

Unemployment is 50%
Tahrir Square 2011
The social contract and altruism is threatened

Changes in Hospitals and Health Systems

- Move towards outpatient care continues to accelerate
- Volume credentialling
- OUTCOMES based payment systems
- The electronic health record e.g. Epic-Wisdom
- Loss of disproportionate share “DiSh” payments
- Fundamental changes in GME
UCSF Self Assessment 2017: “a Burning Platform”

- Rising costs
- Lower reimbursement
- Stronger competition
- Pay for performance
- Recruitment and retention challenges
- Patient safety, triple aim challenges
- Rising consumerism
- Staff and provider burnout
- Need to stay at the top or be subsumed

On the other hand:

The new generation of medical school leaders is focused on behavioral sciences, social consciousness, holistic patient goals and primary care medicine
Health systems based practice and value based payment systems: a challenge and a project for dental education

Why change our relationship with health systems? Why Change how oral health care is paid for?
• There is a sharp continuous decline in the demand for dental services while untreated disease is increasing, ravaging an essential human organ system

• Our current oral health system model is not able to reach the quadruple aim: highest quality at lowest cost and with the best patient experience/outcomes, ... and with the greatest satisfaction of the oral health care team

share of Pretax US National Income
Bottom Half vs. To 1%

![Chart showing the share of Pretax US National Income for Bottom 50% and TOP 1% from 1980 to 2014. The chart indicates a decrease in the share for Bottom 50% and an increase for TOP 1% over the years.](chart.png)
Dentistry has become a profession for the healthy and the wealthy
Some definitions

ACGME guidelines for graduate medical education

• *Systems-Based Practice* requires residents/fellows to *demonstrate* an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care.
Residents/fellows are expected to:

- Work effectively in various health care delivery settings and systems relevant to their clinical specialty
- Coordinate patient care within the health care system relevant to their clinical specialty;
- Incorporate considerations of cost awareness and risk benefit analysis in patient care;
- Advocate for quality patient care and optimal patient care systems;
- Work in inter-professional teams to enhance patient safety and improve patient care quality; and
- Participate in identifying system errors and in implementing potential systems solutions.

Is value based oral health care definable?

- Capitated payment
- Non fee based care
- Per diem rates
- Prevention models
- Variable value based copays
- Outcome based payments
- Population health models
Emphasis on Value

“Providers should be required to measure...improvements in quality of life, functioning and longevity.

After a patient has a knee replaced, can she walk normally? When a child has asthma can he play school sports? Unfortunately, the measurements we use today leaves us unable to make many of these vital judgments about the quality of doctors, hospitals or health care organizations.”

David Lansky, CEO, Pacific Business Group on Health, speaking on behalf of Boeing, Target, Disney, Wal-Mart, Intel, GE, Wells Fargo and the California Public Employees Retirement System.

Needed partners

• DENTAL and HEALTH SCIENCE EDUCATION
• Health systems
• Other health professions schools
• Insurance system
• Public policy leaders
• Dental boards and the licensing community
POLICY PARTNERS
Guidelines for e.g. dental recall nursing home dental care indications for 3rd molar removal

• CARE PATHWAYS

Increased Care Coordination

Elements of an oral health care delivery system that is value based

- Linked to a health system
- Common electronic health record
- Common billing and payment system
- Oral Preventive care, primary care without co-pays and paid at capitated rate
- A hybrid system of fee for service procedural reimbursement for dental specialty care
- Outcomes based assessment models that use measures of overall health
Curriculum needs for system based practice

- Core biomedical science for DDS consistent with health team leaders
- More robust dental team members in DH, DT and DA educated in intraprofessional health system environment
- Dental team integrated into interprofessional team through IPE and collaborative practice models
- All clinical practicum carried out in operating health systems

A model DDS day in a value based oral health care system

- **Dental Medicine**: Lead a team focused on improving health outcomes
  - Intake, diagnosis, collaborative care with other health professionals, integration of oral health care into overall care
- **Dental Surgery**: advanced performance of cognitively complex procedures, leading the intraprofessional surgical team in performance of repetitive less cognitively complex procedures
A model dental hygienist’s day in a value based system

• One hour visit under DDS general supervision: DH Direct patient contact of 20 minutes per patient with 1-2 other team members, dental hygiene assistant, case worker/motivational interviewer. Evidence based assessment of need with personalized medicine approach e.g. caries risk assessment, assessment of home care efficacy, diet, smoking, DM, pregnancy etc.

• Team approach to administration of procedures including periodontal, caries treatment, patient instruction

Dental caries management in a value based system
Comprehensive Caries Staging

- **Stage 1 Enamel caries**
  - 1A Surface demineralization
  - 1B Radiographic evidence, pit or catch

- **Stage 2: Dentine infection**
  - Single surface < 50% of dentinal span
  - Multiple surface or >50% dentinal span

- **Stage 3 Pulpal infection**

- **Stage 4: Infection beyond the tooth structure**
  - Osteolysis
  - Deep space infection
  - Systemic infection
    - Acute
    - Chronic

The key elements of change

- **Collaborative interprofessional practices**
- **Integrated payment system**
- **Value based payment system**
- **Reduce the unit cost of dental care with**
  - Workforce development: team care intraprofessional education
  - Practice models
  - Technology
Key elements of change II

- Oral health integrated into primary care
- Evidence based integration into key health focus areas e.g.
  - Diabetes
  - Obesity
  - Atherosclerotic diseases
  - Oncology
  - Child development
  - Pregnancy

Key elements of change III

- Holistic admissions to dental school
- True commitment to diversity in dental education environment
- Community based education
- Clinical education of dental workforce entirely in health systems
- Collaboration with schools of health sciences and health systems
- Adoption of ACGME core competencies
- Presence of oral health in every AAAHC member
- Advance degrees in Health Systems
Implications of this construct on initial and continued licensure

• Assessing patient evaluation, diagnostic acumen, treatment decisions and treatment implementation
• Assessing functionality in the interprofessional health care environment and systems based practice
• Evidence based management of disease. e.g. dental caries
• Pathway towards EARLY and CAREER LONG evaluation of continued competency
• Privileges and credentialing

A dental policy plan for the world of 2030

• Adjusting the role of initial licensure and continued competency
• Outcomes (not procedure) based payment system for dentistry
• Include dentistry in workforce projects in a meaningful way in the ACA
• Add dentistry to Medicare
• Support inter-professional education and collaborative practice initiatives with a single EHR
• Address oral health workforce issues to include building the oral health team with care that can achieve THE quadruple AIM
• The dentist must lead the MOST ROBUST oral health care delivery team
• Policies that encourage highest use of technology to improve care