Outline

- The Practice of Population Based Dentistry
- Trends in the Market for Dental Care
- Integrating Oral health into Primary Care
- Leadership needs
Trends in Dentistry:

Overview of Dental Care Market
DEMAND SIDE TRENDS

- Patient Population Trends
- Disease Trends
- Need for Dental Care
Patient Expectations

1. By Age Cohort
2. By Economic Market Segmentation
Think Cohorts

Life experience with dental disease and dental care tends to determine each cohort’s oral health expectations and behavior.
Patient Expectations - Trends

1. Demographic
   - Population Size
   - Population Aging
   - Population Diversity

2. Epidemiology of Oral Disease

3. General Public Awareness of oral health care

4. More knowledgeable patients about modern dental services

5. Patients more aggressive in holding dental care providers accountable
Trends in Dentistry: DEMAND SIDE TRENDS

- Patient Population Trends
- Disease Trends
- Need for Dental Care
Dispelling the Myth that 50 Percent of U.S. Schoolchildren Have Never Had a Cavity

Burton L. Edelstein, DDS, MPH
Chester W. Douglass, DDS, PhD

Public Health Reports, Sept./Oct. 1995 Volume 111
Percent of Schoolchildren with Caries

Figure 2. Percent of children with caries in permanent teeth (NIDR 1986–87)
Percent of Schoolchildren with Caries

Percent of Caries-Positive Children (NIDR 1986-1987)

% Caries Positive

Age

Primary Dentition

Permanent Dentition
# US Adult population and Number of Teeth at Risk, 1972

<table>
<thead>
<tr>
<th>Age</th>
<th>Estimated 1972 Population</th>
<th>Functional Teeth per Individual</th>
<th>Teeth at Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-24</td>
<td>25,901,000</td>
<td>30.1</td>
<td>779,620,100</td>
</tr>
<tr>
<td>25-34</td>
<td>27,397,000</td>
<td>26.6</td>
<td>728,760,200</td>
</tr>
<tr>
<td>35-44</td>
<td>22,853,000</td>
<td>50.8</td>
<td>475,342,400</td>
</tr>
<tr>
<td>45-64</td>
<td>42,789,000</td>
<td>15.5 *</td>
<td>663,229,500</td>
</tr>
<tr>
<td>65-87</td>
<td>19,324,000</td>
<td>7.0 **</td>
<td>135,268,000</td>
</tr>
<tr>
<td>85+</td>
<td>1,559,000</td>
<td>3.5 **</td>
<td>5,456,500</td>
</tr>
<tr>
<td></td>
<td>**</td>
<td></td>
<td>2,787,676,700</td>
</tr>
</tbody>
</table>

*mean of 45-54 and 55-64 categories

Source: Reinhardt/Douglass: Future Need for Dentistry
## Cohort-specific Projections of Adult Teeth at Risk in the US, 1990

(middle series population projections)

<table>
<thead>
<tr>
<th>Age</th>
<th>Functional Teeth per Individual</th>
<th>Estimated 1972 Population</th>
<th>Teeth at Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-24</td>
<td>28.4</td>
<td>25,794,000</td>
<td>732,549,600</td>
</tr>
<tr>
<td>25-34</td>
<td>26.7</td>
<td>43,529,000</td>
<td>1,162,224,300</td>
</tr>
<tr>
<td>35-44</td>
<td>23.4</td>
<td>37,847,000</td>
<td>885,619,800</td>
</tr>
<tr>
<td>45-64</td>
<td>18.3 *</td>
<td>46,453,000</td>
<td>850,089,900</td>
</tr>
<tr>
<td>65-87</td>
<td>12.1 *</td>
<td>28,384,000</td>
<td>342,027,200</td>
</tr>
<tr>
<td>85+</td>
<td>8.2 **</td>
<td>3,313,000</td>
<td>27,166,600</td>
</tr>
<tr>
<td></td>
<td></td>
<td>185,320,000</td>
<td>3,999,677,400</td>
</tr>
</tbody>
</table>

*mean of adjacent categories

** assumed no difference than projected for year 2000

(liberal estimate)

Source: Reinhardt/Douglass: Future Need for Dentistry
Cohort-specific Projections of Adult Teeth at Risk in the US, 2030
(middle series population projections)

<table>
<thead>
<tr>
<th>Age</th>
<th>Functional Teeth per Individual</th>
<th>Estimated 1972 Population</th>
<th>Teeth at Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-24</td>
<td>28.4</td>
<td>26,226,000</td>
<td>744,818,400</td>
</tr>
<tr>
<td>25-34</td>
<td>26.7</td>
<td>37,158,000</td>
<td>992,118,600</td>
</tr>
<tr>
<td>35-44</td>
<td>23.5</td>
<td>40,168,000</td>
<td>943,948,000</td>
</tr>
<tr>
<td>45-64</td>
<td>19.5 *</td>
<td>70,810,000</td>
<td>1,380,795,000</td>
</tr>
<tr>
<td>65-87</td>
<td>15.0 *</td>
<td>55,969,000</td>
<td>839,535,000</td>
</tr>
<tr>
<td>85+</td>
<td>10.9 *</td>
<td>8,611,000</td>
<td>93,859,900</td>
</tr>
<tr>
<td></td>
<td></td>
<td>238,942,000</td>
<td>4,995,074,900</td>
</tr>
</tbody>
</table>

*mean of adjacent categories

Source: Reinhardt/Douglass: Future Need for Dentistry
Trends in Percent Edentulism in Adults Aged 18 to 74: 1971-1994

Source: U.S. Dept. of Health and Human Services, National Center for Health Statistics and National Institute of Dental Research
### Mean number of Restored Coronal Surfaces, by Number of Teeth* (Adjusted for Age and Sex)

<table>
<thead>
<tr>
<th>Number of Teeth (Toothgrp)</th>
<th>Mean</th>
<th>SE</th>
<th>F Statistic</th>
<th>P-value</th>
<th>Group comparison</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-10 (1)</td>
<td>7.5</td>
<td>1.37</td>
<td>178.06</td>
<td>.0001</td>
<td>1 vs 2</td>
<td>.001</td>
</tr>
<tr>
<td>11-24 (2)</td>
<td>31.8</td>
<td>1.17</td>
<td></td>
<td></td>
<td>1 vs 3</td>
<td>.001</td>
</tr>
<tr>
<td>25-32 (3)</td>
<td>50.0</td>
<td>1.95</td>
<td></td>
<td></td>
<td>2 vs 3</td>
<td>.001</td>
</tr>
</tbody>
</table>

*ANOVA model with number of restored coronal surfaces as dependent variable and age, sex, and tooth group as main effects and possible interaction terms.
Mean Number of Sites with Pocket Depth $\geq 4$ mm, by Number of Teeth* (Adjusted by Age and Sex)

<table>
<thead>
<tr>
<th>Number of Teeth (Toothgrp)</th>
<th>Mean</th>
<th>SE</th>
<th>F Statistic</th>
<th>$P$-value</th>
<th>Group Comparison</th>
<th>$P$-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-10 (1)</td>
<td>2.48</td>
<td>0.61</td>
<td>32.41</td>
<td>.001</td>
<td>1 vs 2</td>
<td>.001</td>
</tr>
<tr>
<td>11-24(2)</td>
<td>6.96</td>
<td>0.47</td>
<td></td>
<td></td>
<td>1 vs 3</td>
<td>.001</td>
</tr>
<tr>
<td>25-32 (3)</td>
<td>10.50</td>
<td>0.84</td>
<td></td>
<td></td>
<td>2 vs 3</td>
<td>.001</td>
</tr>
</tbody>
</table>

*ANOVA model with number of sites with pocket depth $\geq$4mm as dependent variable and age, sex and tooth group as main effects and possible interaction effects.
### Comparison of the mean number of DMFS among US adults aged 45+ years in NHANES I* and NHANES III**

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Female</th>
<th>Male</th>
<th>Age Group</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>45-49</td>
<td>65.1</td>
<td>59.5</td>
<td>45-54</td>
<td>65.0</td>
</tr>
<tr>
<td>50-54</td>
<td>79.0</td>
<td>68.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>55-59</td>
<td>80.0</td>
<td>76.7</td>
<td>55-64</td>
<td>81.4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>65-74</td>
<td>88.7</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>75+</td>
<td>101.3</td>
</tr>
</tbody>
</table>

Note: Data for all persons regardless of dentate status. NHANES III also provide data specifically for dentate persons.

### Dental Utilization by Number of Teeth

<table>
<thead>
<tr>
<th>Dental Utilization</th>
<th>Number of Teeth</th>
<th>1-10</th>
<th>11-24</th>
<th>25-32</th>
</tr>
</thead>
<tbody>
<tr>
<td>When did you last receive care?*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 1 year</td>
<td>109 (55%)</td>
<td>279 (78%)</td>
<td>136 (89%)</td>
<td></td>
</tr>
<tr>
<td>1-3 years</td>
<td>22 (11%)</td>
<td>45 (13%)</td>
<td>10 (6%)</td>
<td></td>
</tr>
<tr>
<td>&gt; 3 years</td>
<td>67 (34%)</td>
<td>31 (9%)</td>
<td>7 (5%)</td>
<td></td>
</tr>
<tr>
<td>How often have received care in past 12 months?†</td>
<td>Mean</td>
<td>1.11</td>
<td>1.64</td>
<td>1.97</td>
</tr>
<tr>
<td>SD</td>
<td>1.17</td>
<td>1.12</td>
<td>1.01</td>
<td></td>
</tr>
</tbody>
</table>

*Chi-square = 86.15; P<.001
† One-way ANOVA; F = 27.5, P<.001
### Projected Amount of Need for FPD’s and RPD’s (in Millions of Hours) by Year

<table>
<thead>
<tr>
<th>Year need</th>
<th>FPD’s</th>
<th>+</th>
<th>RPD’s</th>
<th>=</th>
<th>Total Need</th>
<th>-</th>
<th>Annual Supply</th>
<th>=</th>
<th>Projected Unmet</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>363.1</td>
<td>+</td>
<td>172.3</td>
<td>=</td>
<td>535.4</td>
<td>-</td>
<td>46.7</td>
<td>=</td>
<td>488.7</td>
</tr>
<tr>
<td>2010</td>
<td>378.2</td>
<td>+</td>
<td>185.3</td>
<td>=</td>
<td>563.5</td>
<td>-</td>
<td>47.8</td>
<td>=</td>
<td>516.7</td>
</tr>
<tr>
<td>2020</td>
<td>402.5</td>
<td>+</td>
<td>207.0</td>
<td>=</td>
<td>609.4</td>
<td>-</td>
<td>49.2</td>
<td>=</td>
<td>560.2</td>
</tr>
</tbody>
</table>
### Number US adults (in thousands) who need one or two dentures

<table>
<thead>
<tr>
<th>Age Group</th>
<th>1991</th>
<th>2000</th>
<th>2010</th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>25-34</td>
<td>858</td>
<td>670</td>
<td>613</td>
<td>601</td>
</tr>
<tr>
<td>35-44</td>
<td>3770</td>
<td>3841</td>
<td>2928</td>
<td>2614</td>
</tr>
<tr>
<td>45-54</td>
<td>5612</td>
<td>7332</td>
<td>7711</td>
<td>5850</td>
</tr>
<tr>
<td>55-64</td>
<td>7667</td>
<td>7836</td>
<td>10,232</td>
<td>10,595</td>
</tr>
<tr>
<td>65-74</td>
<td>7675</td>
<td>6837</td>
<td>7054</td>
<td>9164</td>
</tr>
<tr>
<td>75-84</td>
<td>6166</td>
<td>6613</td>
<td>5934</td>
<td>6381</td>
</tr>
<tr>
<td>85+</td>
<td>1900</td>
<td>2287</td>
<td>2654</td>
<td>2681</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>33,648</td>
<td>35,416</td>
<td>37,126</td>
<td>37,886</td>
</tr>
<tr>
<td><strong>Demand at 90% Utilization</strong></td>
<td>30,283</td>
<td>31,874</td>
<td>33,413</td>
<td>34,097</td>
</tr>
<tr>
<td><strong>Total number of edentulous arches</strong></td>
<td>53,839</td>
<td>56,493</td>
<td>59,265</td>
<td>61,043</td>
</tr>
</tbody>
</table>
Trends in Dentistry:

Supply Side Trends

Dental Workforce

• Dentist

• Allied Dental Trends
Percent Distribution of Professionally Active Dental Specialists: 1998

- 79.4% of professionally active dentists are generalists
- 20.6% are specialists

Source: American Dental Association
U.S. Dental School Graduates
1955-1999

Source: American Dental Association
Estimated Additions of Dentists to the Dental Workforce: 1995-2040

Assumptions: number of graduates remains at 4050

Source: American Association of Dental Schools
Net Change in Dentists Compared to Population Growth

Assumptions:
- number of graduates remains at 4050
- retirement age of 65

Source: American Dental Education Association & US Census Bureau
Dentists per 100,000 U.S. Population
1950-2020

Source: Bureau of Health Professions, HRSA, DHHS. Data from the Eighth Report to Congress 1991 and unpublished reports.
Trends in Dentistry:

- Economic Market
- Dental Benefits
Dental Benefit Plans
Total: 162 million in US have dental benefits
What kind of coverage is it?

- 60 million - Indemnity plans (what we used to call dental insurance)
- 54 million - PPO plans (discounted dental fees)
- 27 million - Dental HMOs (includes dental Medicaid!)
- 21 million - “Referral” dental plans

Total: 162 million
Trends in Dental Benefit Plans

1. Indemnity plans are declining
2. Medicaid has had cuts in services covered
   Technically, the number of people covered is still the same
3. State Medicaid programs were reorganized
4. The 21 million people with new Referral plans is a misuse of the term “insurance”.
5. DHMOs stopped growing in 2000.
Insured vs Uninsured Workers
1988-2002
Economic Climate

- Weak economic growth
- Jobless recovery is slow
- Recovering Financial Markets
- Depressed tax revenues
- State budget deficits
- Escalating health care costs
- Social program cuts
- Medicare program limitations
- Medicaid program cuts
Trends in Dentistry:

Economic Behavior in a Sellers Market

* Dental Expenditures as a Percent of Total Health Expenditures
Annual Inflation Rates of Medical Care, Dental Care, and All Goods & Services

% Annual Increase

DENTISTS

PHYSICIANS

ALL ITEMS
TRENDS

- Population size increasing
- Population aging
- Population diversity
  - ethnic
  - household income
- Current recession
- Current loss of jobs
- Increase retention of teeth
- Projected decline in supply of dentists
- Rising dental fee inflation rates
Possible Outcomes among 55-75 year olds who have low incomes and/or no dental insurance:

- increasing need
- increasing amounts of untreated disease in all low income age groups
- limited services from Medicaid
Possible Outcomes among 55-75 year olds who have incomes or dental insurance:

- increasing need
- increasing demand
- higher prices for services
- longer waiting times for appointments
- more closed practices
Integrating Oral Health and Primary Care

- **Scenario I**: Increase coordination and improve referrals
- **Scenario II**: Expand scope of practice
- **Scenario III**: Focus on integrated oral health care risk assessment
Integration
or
Collaboration
Primary vs. Secondary Care
I. System Barriers
   - Graduate Education
   - Insurance Coverage
   - Reimbursement Structures
   - Referral Networks

II. Practice Barriers
   - Differences in Practice Environments
   - Lack of Routine Communication System
   - Clinical Training
   - Professional Culture Differences
Integrating Oral Health and Primary Care

- Integrating preventive dentistry into primary medical care (RDH in medical setting)
- Integrating primary care medicine into dental care practice (RN in dental office)
- Integrating oral health care into school health care systems or community dental care programs for children where parents can be reached
  - Example: Somerville Early Head Start Program
Scenario I

- Screening procedures should include dentists screening children and adults
- Automatic referrals by medical practitioners for preventive dental care for pregnant women
- Cross-referrals for oro-facial infections
- Co-ordination of treatment of chronic diseases
Scenario II

- Pediatricians and pediatric nurses should screen patients for oral health and provide preventive dental care.
- Staff of nursing facilities should assist elderly individuals with the use of chlorhexidine mouthwash.
- Dentists can monitor patients’ general health and medical practitioners can monitor patients’ oral health.
Scenario III

- Common risk factors such as diet, poor hygiene, tobacco use, stress, oral bacteria etc. are recognized and emphasized in patient care.

- Integrated health care risk assessment model is better than an isolated disease-specific model as it addresses factors common to oral and general health.
Trends in Dentistry:

Business Management in Professional Organizations
# Structure in Management Styles

<table>
<thead>
<tr>
<th>More Structure</th>
<th>vs.</th>
<th>Less Structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task Oriented</td>
<td>vs.</td>
<td>Motivation/Shared Goals</td>
</tr>
<tr>
<td>Rules &amp; Regulations</td>
<td>vs.</td>
<td>Common Sense</td>
</tr>
<tr>
<td>Paper Work</td>
<td>vs.</td>
<td>Relationships</td>
</tr>
<tr>
<td>Time Sheets</td>
<td>vs.</td>
<td>Flex Time</td>
</tr>
<tr>
<td>Checking</td>
<td>vs.</td>
<td>Trust</td>
</tr>
</tbody>
</table>
Matching Organizational and Individual Goals

- Individual behavior reinforces organizational purposes
- Promotes organizational loyalty
- Facilitates agreement about organizational goals
- Increases job satisfaction
- Promotes work values
Taking Risks as a Manager

- It’s all a risk on some level
- Not knowing what can’t be done is an advantage
- Estimate probability of success
- Work to limit downside
- Mavericks are needed
  - a difficult fit in large organizations
  - tend to be entrepreneurs in small organization
- Need COOs/Clinic Managers who lead within the organization
Leadership - Definition and Styles

Formal and Informal
Definition: Ability to stimulate people to DO something
Attributes of Effective Leaders

1. Have vision and purpose
   - Know their goals
   - Commitment over long term
   - Flexibility on pathway

2. Prepared
   - Knows WIT to achieve
   - Have experienced success
Attributes of Effective Leaders

(cont’d)

- 3a. Listens to others
- 3b. Creates team attitude
- 3c. Can identify win-win situations
- 3d. Can hire and keep excellent employees
- 3e. Works for the benefit of employees

- 4a. Is not self conscious
- 4b. Has ego strength, but not a problem
- 4c. No fear of failure
- 4d. Is principled
Results of Trends
Conclusions

- Safety net Infrastructure
- Providers
  - Numbers
  - Diversity
  - Allied Dental Care Providers
- Operational Management
- Leadership