Children’s Oral Health & Dental Care

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Messages

1. The mouth is an integral & unique body part important to human function and existence.
2. Determinants of oral health are multiple - extending to genetics, environment and behaviors as well as healthcare.
3. Oral disease burden in US children is high and marked by profound disparities.
4. The majority of oral diseases are overwhelmingly preventable.
5. Pediatric oral disease – particularly tooth decay – is consequential to children’s lives and function.
6. The dental and medical delivery systems are profoundly different.
7. Fixes to coverage, safety net, workforce, and prevention are all within reach.
The Mouth: An Essential Body Part

An organ of
- Digestion
- Respiration
- Communication
- Protection
- Sex

Home to unique structures
- Teeth
- Gums
- Tongue
- TMJ
- Salivary glands

Oral-systemic health connection through contiguous and distant connections (circulatory, neurologic, lymphatic etc)
Complex Determinants of Oral Health

Explanatory Causation Model
- Genetics
- Environment
- Health behaviors
- Use of dental services

Access to Care (10%)
Environment (20%)
Genetics (20%)
Health Behaviors (50%)
Determinants of Oral Health

INFLUENCES ON ORAL HEALTH AND ORAL HEALTH DISPARITIES¹,²

Individual Status: Ascribed: Genetic, Ethnicity, Age, Gender, Achieved: Education, Income, Occupation

DISTAL
Macro
- Natural Environment
  - Natural fluoride in water
  - Geography / Climate
- Macrosocial Factors
  - Demand for health services and public health
  - Political support for dentistry
  - Support for sugar and sweeteners
- Inequalities
  - Dental care inequities
  - Inequities in opportunities related to oral and craniofacial conditions
- Organization & Delivery of Services
  - Supply of dentists
  - Number and distribution of minority dentists
  - Dental insurance
  - Referral pathways for care

INTERMEDIATE
Community
- Physical Environment
  - Location of dental services
  - Artificial water fluoridation
- Macrosocial Factors
  - School
  - Community education

IMMEDIATE
Interpersonal
- Stressors
  - Homelessness, poverty, family
  - Oral hygiene practices

PROXIMAL
Individual
- Biological Processes
  - Host defense
  - Staphylococcal infections

HEALTH & WELL-BEING
Individual & Population Status
- Health Outcomes
  - Oral health
- Well-Being and Quality of Life
  - Craniofacial quality of life

Type and Use of Services
- Motivational interviewing

Infection transmission
- Preventive dental infection
- Caries, infection transmission

Individual Psychology
- Taste preference for sugar
- Fear of dentists and dental treatment

Birth

Life Course

¹Based on Patrick and Erickson, 1993 and Schultz and Northridge, 2004. ²Boxes contain only selected examples of influences in each; readers are suggested to think of additional examples.
Levels of Possible Interventions

- Policy
- Environmental
- Behavioral
- Personal
- Oral
- Dental

Tooth
Mouth
Person
Family
Community
Society
Oral Diseases

Oral diseases relate to unique tissues:

- Teeth: Tooth Decay, Early Childhood
  - Malocclusion, Late Childhood
- Gums: Periodontal Disease, Adolescent
- TMJ: Joint Dysfunction, Adult
- Mucosa: Oral Cancer, Older adult
- All: Injury, Any age

All oral diseases are:

- Common
- Progressive
- Cumulative
- Consequential
Adolescent Oral Health
Risk Factors

• Risk Factors for poor oral health
  – Risk behaviors (drugs, alcohol, driving, firearms, pick-up sports etc)
    – oral trauma
  – Tobacco – periodontal disease, cancer
  – Poor eating patterns and food choices – dental caries
  – Oral sex – STDs
  – Pregnancy – risk factor for periodontal disease
  – Lip and tongue piercing – risk for tissue damage & infection
Early Childhood Oral Health Risk Factors

- Risk Factors for Early Childhood Caries
  - Early infection with “cariogenic” bacteria
  - High frequency carbohydrate ingestion
  - Lack of exposure to fluorides

Maria’s upper (maxillary) teeth, with severe early childhood tooth decay
Cavity Prevalence is Extreme (NHANES III)

28% of US 2-5 Year Olds Have Cavities in “Baby Teeth”
70% of children with cavities need repair

50% of US 12-15 Yr Olds Have Cavities in Permanent Teeth
33% of children with cavities need repair;
Disease Disparities are Profound

80% of cavities occur in only 25% of children – primarily low income children

Poor and low income children have more than twice the number of cavities

www.cdhp.org
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Cavity Disparities by Race/Ethnicity

- Children of color have more early childhood caries experience even after adjusting for income
- Early cavities predict future cavities
- Cavities prevalence in young children is increasing portending future increases in disease burden
Particularly Vulnerable Children

- Native Americans
- Special needs
- Immigrant
- Migrant
- Homeless
- Rural & frontier

All receive higher levels of medical than dental care

Higher Disease Rates
Less Care
More Government role
Who is special to dental systems?

Social Gradient

Better Oral Health, More Access, Less Difficult Care

Risk for Poor Oral Health
Risk for access to Dental Care
Difficulty of Treatment

Worse Oral Health, Less Access, More Difficult Care

Health Gradient

Patient 1

Patient 2

Children’s Dental Health Project  www.cdhp.org
Early Childhood Caries Overview

Poor and low-income preschoolers are:
- 5 times more likely to have cavities
- have 3 times more cavities
- 2 times more likely to seek care for pain
- yet only half as likely to obtain a dental visit

System is upside down:
- Kids with most needs get least care
- Kids with least needs get most care
Disparities in Dental Care

11-18 yo with Dental Visit (MEPS)

% with Dental Visit

- sex
- race
- income
- parent education

Categories:
- female
- male
- white
- non-white
- high income
- middle income
- low income
- college
- high school
- some/no school
Coverage Matters

12-18 Year Old's Use of Dental Services by Coverage (MEPS 1996)

- Commercial full year: 66.2%
- Commercial part year: 66.0%
- Medicaid full year: 36.9%
- Medicaid part year: 33.6%
- Uninsured: 31.0%

54% children
26% children
20% children

Children's Dental Health Project  www.cdhp.org
Use of Dental Services

Dental Visit in Last Year by Age

% with Dental Visit

Age

2-4 5-14 15-24 25-34 35-44 45-54 55-64 65-74 75-84 85+

NHANES III MEPS 2000 NHIS 2001 Medicaid
Preventive Dental Visits (PreSCHIP)

Children 100-200% FPL have had remarkable increase in dental care and preventive services since SCHIP
Tooth Decay in Children is Consequential

Disturbed eating
Disturbed sleeping
Disturbed speaking
Disturbed behavior
Disturbed learning

If it pains you to look at this picture, imagine how the child feels.

An estimated 2,500 Rhode Island children between the ages of six months to four years-old suffer from Early Childhood Tooth Decay. But not a single one of them has to. That’s because Early Childhood Tooth Decay is preventable. It occurs when children’s teeth are harmed by frequently drinking from bottles or sippy cups that contain sweetened milk, juice, soda or other sugary liquids. So if your child needs comforting, try a bottle of water, a pacifier, a favorite blanket or toy. Be the best parent you can be and help prevent Early Childhood Tooth Decay. It will make you and your child feel a lot better.

Source: Rhode Island Department of Health, Oral Health Program, January 2011

In partnership with:

Every child deserves a healthy smile.

Children’s Dental Health Project  www.cdhp.org
Cavities are Consequential

Morbidity/Mortality Model

- Death Related to Dental Infection
- Death Related to Treatment
- Head and Neck/Systemic Infection Related to Disease
- Pain and Infection Localized to Mouth
- Pain and Infection Localized to Tooth
- Intermittent Dental Pain on Eating, Chewing
Yet Tooth Decay is Preventable

Effective prevention must

- start before the disease is established
  - AAPD, AAP Age One Dental Visit Policy
  - AAPD/Bright Futures: Dental Home
- be tailored to level of risk
- involve all who deal with young children
- intervene at multiple levels from tooth to policy
- involve community-based health promotion, education, sealants (30% of 6-11 year olds currently), community water fluoridation

Early intervention & prevention are cost effective and cost saving
Dental Delivery & Finance System

Workforce Size
- ~5 to 1 physicians to dentists but dental care is suggested at high frequency;
- ~10 to 1 pediatric dentists to pediatricians

Organization
- Overwhelmingly solo private practice

Safety net
- ER: medical “backbone” not available for dental
- Health Centers: limited dental, adult focus, swamped
- Training programs: few & swamped despite recent expansions

Coverage
- 2.6X fewer children have dental than medical
- Medicaid no better than no coverage despite EPSDT guarantees but with very notable exceptions
- SCHIP dental benefit variable, insecure, optional

Financing
- Child dental care consumes ~25% of child healthcare spending
- Child dental care consumes <5% of Medicaid child healthcare spending
Provider Interest & Competencies

- Provider preferences in location & population served
- Crowd out from demand for esthetic dentistry
- Low Medicaid fees
- Logistics with Medicaid patients: language, transportation, appointment keeping
- Lack of training in young child care
- High use by low-needs children

Unprepared for Select Areas of Practice

![Graph showing percentage of dental graduates unprepared for select areas of practice from 2001 to 2005 for Pediatric, Geriatric, and Disabled populations.](graph.png)
Quality Considerations

- Effectiveness
  - Minimal objective evidence beyond water fluoridation and sealants
- Efficiency
  - High cost to benefit ratio for low-risk adolescents
  - Care for at-risk adolescents is insufficient with high return on minimal costs for few utilizers
- Timeliness
  - Frequency is better than sufficient for most utilizers; less than sufficient for at-risk and high-needs populations
- Safety
  - Well established
- Patient Centeredness
  - Variable – tends to be “one-size-fits-all”
  - Adolescents report being treated as “objects” rather than participants
- Equity
  - Profound inequities in care and health status by income, race/ethnicity, parent education, and rurality
“It is essential to develop a habit of observation and reflection”
Personal Reflections

• As clinician
  – Children suffer too much, too often, and too needlessly. To see a child in pain and relieve that pain is hugely satisfying for the dentist but too often short lived for the child

• As analyst
  – Dental concerns represent the worst case of prevalence, day-to-day consequence, Medicaid performance, workforce/financing/safety net shortcomings but is uniquely solvable at low cost

• As advocate
  – America offers children promise but not success. Failing their oral health needs fails the future.