Innovative Strategies for Addressing Oral Health Disparities in Underserved Children

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Minnesota Chapter of the American Academy of Pediatrics
Hot Topics in Pediatrics Conference
May 1, 2015
Objectives

- Review the epidemiology and oral health burden of dental caries among children in Minnesota and the United States
- Discuss barriers to access and utilization of dental and oral health services by underserved children
- Identify innovative strategies for improving oral health in medical, dental, and community settings
- Report outcomes of collaborative, interdisciplinary oral health projects
“Dental caries (tooth decay) is the single most common chronic disease of childhood — 5 times more common than asthma and 7 times more common than hay fever”
Figure 3. Prevalence of dental caries in permanent teeth, by age and race and Hispanic origin among adolescents aged 12–19 years: United States, 2011–2012.

Figure 1. Prevalence of untreated dental caries among children and adolescents, by age, race and ethnicity, and poverty level: United States, 2009–2010.

10% of United States children with a toothache

2007 National Survey of Children’s Health

Survey question of parent or guardian: To the best of your knowledge, has he/she had a toothache within the past 6 months?

89,730 subjects representing 69 million US children

“...more than 51 million school hours are lost each year to dental-related illness”
School Performance

- School absence due to dental pain was associated with poorer school performance [aOR 1.94 (1.04, 3.63)]

- Children with poorer reported oral health status were more likely to be reported by parents to have Cs, Ds, and Fs in school [aOR 1.70 (1.16-2.49)]

- Children with poor oral health may limit a child’s ability to do well in school or while studying at home

1495 elementary and high school students from high percentage free and reduced lunch public schools in Los Angeles County, California

Students with a toothache within the previous 6 months were nearly 4 times more likely to have a G.P.A. below the School District median score.

Students without an accessible dentist were 3 times more likely to miss school days because of dental problems than students with a dentist

## Untreated Dental Caries

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>TOTAL, 5 to 17 Year Olds</td>
<td>24.3</td>
<td>23.3</td>
<td>16.3</td>
<td>14.2</td>
<td>16.7</td>
</tr>
<tr>
<td>Below 100% poverty</td>
<td>39.0</td>
<td>33.4</td>
<td>26.0</td>
<td>21.5</td>
<td>24.3</td>
</tr>
<tr>
<td>100–199% poverty</td>
<td>29.7</td>
<td>32.2</td>
<td>18.2</td>
<td>18.6</td>
<td>21.3</td>
</tr>
<tr>
<td>200% poverty and above</td>
<td>15.2</td>
<td>14.5</td>
<td>11.8</td>
<td>9.6</td>
<td>9.7</td>
</tr>
<tr>
<td>White, non-Hispanic</td>
<td>19.5</td>
<td>19.7</td>
<td>13.1</td>
<td>11.4</td>
<td>13.5</td>
</tr>
<tr>
<td>Black, non-Hispanic</td>
<td>33.2</td>
<td>28.5</td>
<td>21.9</td>
<td>20.7</td>
<td>21.9</td>
</tr>
<tr>
<td>Mexican American</td>
<td>38.3</td>
<td>34.1</td>
<td>22.0</td>
<td>21.3</td>
<td>23.8</td>
</tr>
</tbody>
</table>
Nationwide Emergency Department Sample (NEDS) for the year 2008

215,073 E.D. visits

dental caries, pulp and periapical lesions, gingival /periodontal lesions, and mouth cellulitis occurring among patients who were 21 years old and younger

75% with Medicaid or uninsured

7,195 patients required hospital admission and a mean length of stay of 4.6 days

67% of E.D. visits and 72% of hospital admissions occurred on weekdays

Data compiled from the New York State Bureau of Dental Health

Children less than 6 years of age with early childhood caries

74% increase in E.D. visits during the time period, 2004 - 2008

- In 2008, 57.8 visits per 100,000 children

29% increase in ambulatory surgical facility visits during the 5 year time period

- In 2008, 335.5 visits per 100,000 children

### FIGURE 3

**Caries Experience and Untreated Caries in Students in 3rd Grade**

by Free and Reduced **Lunch** Eligibility in Minnesota - BSS2010

<table>
<thead>
<tr>
<th>Percentage of Caries and Untreated Caries</th>
<th>School FRL 25% or less</th>
<th>School FRL 26% - 49%</th>
<th>School FRL 50% - 74%</th>
<th>School FRL 75% or more</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caries Experience</td>
<td>46</td>
<td>53</td>
<td>70</td>
<td>72</td>
</tr>
<tr>
<td>Untreated Caries</td>
<td>11</td>
<td>19</td>
<td>26</td>
<td>27</td>
</tr>
</tbody>
</table>

The Status of Oral Health in Minnesota. September 2013. Minnesota Department of Health. [LINK](#)
Barriers to Dental & Oral Health Services for Children

- Geographic distribution of dental providers
- Insurance and payment
- Parental oral health literacy
- Family dynamics and social factors
- Patient level considerations (i.e. medical status, behavior, severity of dental disease)
Child, family, and community influences on oral health outcomes of children. The triad was adapted from Keyes PH. Int Dent J. 1962;12:443–464; and the concentric oval design was adapted from the National Committee on Vital and Health Statistics. Shaping a Health Statistics Vision for the 21st Century. Washington, DC: Department of Health and Human Services Data Council, Centers for Disease Control and Prevention, National Center for Health Statistics; 2002:viii.

Strategies for Addressing Oral Health Disparities

- Oral health risk assessment and counseling in non-dental settings
- Fluoride varnish application in primary care
- Health promotion and disease prevention with advanced dental therapists
- Combined medical – dental well child visits
- Medical and dental visits at different locations on the same day
- Use of community health workers and health navigators
- Coordinated dental appointments with arranged transportation
- Teledentistry

### Population

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Children age 5 years and younger</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prescribe oral fluoride supplementation starting at age 6 months for children whose water supply is deficient in fluoride. Grade: B</td>
<td></td>
</tr>
<tr>
<td>Apply fluoride varnish to the primary teeth of all infants and children starting at the age of primary tooth eruption. Grade: B</td>
<td></td>
</tr>
<tr>
<td>Routine oral screening examinations: No recommendation. Grade: I statement</td>
<td></td>
</tr>
</tbody>
</table>

### Risk Assessment

All children are at potential risk for dental caries; those whose primary water supply is deficient in fluoride (defined as <0.6 ppm F) are at particular risk. While there are no validated multivariate screening tools to determine which children are at higher risk for dental caries, there are a number of individual factors that elevate risk, such as low socioeconomic status, being an ethnic minority, frequent sugar exposure or snacking, inappropriate bottle feeding, developmental defects of the tooth enamel, dry mouth, history of previous caries (in the child, a sibling, or mother), lack of access to dental care, and inadequate preventive measures (such as failure to use fluoride toothpaste).

### Preventive Medications

Oral fluoride supplementation prevents dental caries in children with inadequate water fluoridation. All children with erupted primary teeth can benefit from the periodic application of fluoride varnish, regardless of the levels of fluoride in their water.

### Balance of Benefits and Harms

- There is a moderate net benefit of providing oral fluoride supplementation all recommended doses in children older than age 6 months who reside in communities with inadequate water fluoride.
- There is a moderate net benefit of providing fluoride varnish application to all children starting at the age of eruption of primary teeth to age 5 years.
- The evidence on performing routine oral screening examinations for dental caries in children from birth to age 5 years is insufficient, and the balance of benefits and harms cannot be determined.
Fluoride Varnish in Primary Care

- Medical assistant level training
- No special equipment needed
- Takes seconds to minutes
- Can eat and drink right away
- Painless
- Reimbursed by MA now
- Private insurers coming soon
“It is especially critical that dentists provide counseling to caregivers that involves the use of oral description, visual aids and actual demonstration to help ensure that the appropriate amount of toothpaste is used.”

The toothbrush on the left shows a smear of toothpaste (0.1 milligram of fluoride) and the one on the right a pea-sized amount (0.25 mg of fluoride).
New Toothpaste Recommendations

Less than 3 Years of Age
- Fluoride toothpaste -- Smear / grain of rice
- Start as soon as teeth erupt
- Brush morning and night or as directed by dentist or physician
- Supervise amount of toothpaste used

3 to 6 Years of Age
- Fluoride toothpaste – pea sized amount
- Brush morning and night or as directed by dentist or physician
- Supervise child to minimize swallowing of toothpaste
Oral Health Risk Assessment

- Identify risk factors for dental caries
- Recognize and reinforce protective factors
- Assess the mouth for findings consistent with dental caries or inadequate oral hygiene
- Classify the child’s caries risk level
- Provide oral health services
- Identify self management goals with caregivers

Oral Health Risk Assessment Tool and Guidance, American Academy of Pediatrics, Section on Oral Health [LINK]
Oral Health Counseling & Referral

- Starts with PCPs
- Counseling from birth onward, **sleep practices**
- Information on diet, bottles/nighttime nursing, tooth brushing, fluoridated water
- Early referrals for dental home. **Visit by 1st birthday**
<table>
<thead>
<tr>
<th>Practice Protocol Steps</th>
<th>Practice Tools &amp; Materials</th>
<th>Approximate Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Determine child’s oral health risk *</td>
<td>Oral health risk assessment tool(^{19})</td>
<td>2 minutes</td>
</tr>
<tr>
<td>Provide anticipatory guidance</td>
<td>Educational materials; baby bottle tooth decay, sippy cups &amp; tooth decay, sharing germs, tips to increase fruits &amp; vegetables, tooth brushing tips/songs(^ {13,14,20,21})</td>
<td>1–4 minutes</td>
</tr>
<tr>
<td>Perform visual oral health assessment</td>
<td>Gloves, gauze, small flashlight</td>
<td>3 minutes</td>
</tr>
<tr>
<td>Apply topical fluoride varnish</td>
<td>Fluoride varnish, applicator tool</td>
<td></td>
</tr>
<tr>
<td>Refer to pediatric dentist when appropriate</td>
<td>List of dentists; community oral health service providers, Medicaid providers</td>
<td>1 minute</td>
</tr>
</tbody>
</table>

* High risk factors include continuous use of bottle/sippy cup with beverages other than water, frequent snacking, primary caregiver with a high rate of dental decay, or special health care needs.\(^{19}\)

“Baby Steps to Oral Health”

Pediatrics and Pediatric Dentistry at Hennepin County Medical Center

Capture 1 year olds (between 6-months and 3 years)

Done in Peds clinic

Establish dental home

Eileen Crespo, D.M.D., Patricia Tarren, B.D.S.,
Andrea Leyland, D.D.S., Elisabeth Fulling, D.D.S.
Combined Medical – Dental Well Child Visits

“Baby Steps to Oral Health”

Pediatrics and Pediatric Dentistry at HCMC

Pediatric clinic ~1300 1 year WCC from Jan-Dec 2014
Dental clinic 67 1 year dental check

Fluoride Varnish (FV) billing:

Pediatric clinic 4520 patients (<47 months) 27.5% billed FV
Dental clinic 366 patients 94% billed FV
Dental Therapy - A New Profession

Unique programs for aspiring dental professionals

In 2009, Minnesota became the first state to establish licensure of dental therapists, with the primary purpose to extend dental health to underserved populations. A dental therapist is a licensed oral health professional who practices as part of the dental team to provide educational, clinical, and therapeutic patient services. Dental therapists provide basic preventive and restorative treatment to children and adults, and extractions of primary (baby) teeth under the supervision of a dentist. Dental therapists work primarily in settings that serve low-income, uninsured and underserved populations or in a dental health professional shortage area.
Advanced Dental Therapists

- University of Minnesota / Metro State
  - 1st U.S. dental school to create an educational program for dental therapists
- Dental students and dental therapy students trained in tandem curriculum
- Focus on health promotion and disease prevention
- Practice in a team setting with dentists
- Minnesota was the first state to license ADTs
“Strong Teeth Program”

Eastman Dental Center and Golisano Children’s Hospital at Strong

Rochester, NY

Enhancing Utilization of Oral Health Services for Underserved Children: A Demonstration Project

Funded by the New York State Department of Health, 2005-2011

Lenora Colaruotolo, L.M.S.W., Jeff Karp, D.M.D., Neil Herendeen, M.D.
**INCREASED VISIBILITY BUT LIMITED ACCESSIBILITY**

- Grant Funded
- Community Health Worker
- Cumbersome referral process

Graph shows:
- Referrals/month and % Attended over the years 2002-2011.
LACK OF VISIBILITY BUT IMPROVING ACCESSIBILITY

Lapse in Grant Funding
No Community Health Worker
Improved referral and scheduling process

Graph adapted from the raw image.
Grant Funded
Community Health Worker
Referral for Immediate Dental Visit
Pediatric Dentistry -- Health Navigators

“School of Dentistry Portico Program”

University of Minnesota Pediatric Dental Clinic
made possible by Delta Dental of Minnesota,
701 25th Avenue S, Minneapolis, MN 55454

Portico Healthnet,
2610 University Ave W # 550,
St Paul, MN 55114

Susan Howe, Debra Holmgren, M.A., M.P.A, Jeffrey Ogden, M.B.A., Jeff Karp, D.M.D.
Our 10 Step Approach

- Financial Support & Time Effort
- Mutually Beneficial Program Goals
- Safety Net Health Navigators
- Clearly Defined Program Eligibility
- Triage Medical & Dental Forms
- HIPAA Compliant Online Database
- Scarcity Appointment Model
- Preference Short Call List
- Pediatric Dental Services
- Scale Program For Sustainability
Pilot the Program

- <275% federal poverty level and uninsured children eligible
- Enroll children less than 13 years of age
- Complete intake medical forms and urgency assessment tool
- Use HIPAA compliant database for tracking patient status among partners
- Health navigator completes forms with families and schedules clinic appointments
- Patients scheduled 24 to 48 hours before clinic appointments
- Comprehensive dental services
## Treatment Urgency

<table>
<thead>
<tr>
<th>Urgency Assessment</th>
<th>Parental Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has your child been examined by a dentist?</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>No</td>
</tr>
<tr>
<td>Has your child had a dentist visit in the last year?</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>No</td>
</tr>
<tr>
<td>Do you have any concerns about your child’s teeth or mouth?</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>No</td>
</tr>
<tr>
<td>If your child has been found to need dental treatment, were you able to get ALL of the treatment completed?</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>No</td>
</tr>
<tr>
<td>Does your child have dental problems that impact his/her ability to sleep, eat, speak, play, or learn?</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>No</td>
</tr>
</tbody>
</table>

**How often does your child’s dental problems impact him/her?**

- Every day
- Once a week
- Several days a week
- Once a month
- Occasionally

**Priority Level**

- Schedule appointment now
- Schedule appointment within 2 months
- Schedule appointment within 4 months
Pilot Project Outcomes, Sept. 2014

- 890 client contacts -- letter, phone, text
- 54 patients treated
- 22 teeth extracted
- 75 teeth restored
- 40 teeth sealed
- 32 appointments -- sedation or general anesthesia

Presented at the AAP Section on Oral Health Session – National Convention and Exhibition – San Diego, CA – October 2014

Karp J, Howe S, Stull S, Holmgren D, Ogden J. A 10-Step Approach for Exceeding 95% Dental Appointment Attendance by Uninsured Children.
“Pediatric Dentistry Kanabec County Partnership”

University of Minnesota Pediatric Dental Clinic made possible by Delta Dental of Minnesota and Kanabec County Home Health Nurses

Minneapolis and Mora, MN

Transportation provided by Kanabec County

Reserved scheduling in Pediatric Dentistry clinic

Susan Howe, Christine Andres, Diana Waschenbecker, Jeff Karp, D.M.D.
“Finger Lakes Community Health Teledental Program”
Eastman Dental Center and Finger Lakes Community Health (FLCH)
Rochester and Geneva, NY
Multiple Funding Sources [USDA, NYSDOH, FCC, HRSA]

Mary Zelazny (CEO, FLCH), Anthony Mendicino D.D.S.,
A V.I.B.R.A.N.T Approach

- Videoconferencing, Intraoral cameras and teledentistry, Bilingual/bicultural community health workers, Remote care using mobile dentistry, Access to pediatric dentists, New partnerships, and Telepresence for consultation, distance learning, and treatment planning


Presentation Slides  Health Center Oral Health Promising Practice
Interactive Teledentistry Consults

- Toddlers and children with extensive dental caries
- Rural families with Medicaid or uninsured
- Transportation, parental work schedules, and other psychosocial barriers
- Pharmacologic and non-pharmacologic behavior management needed
- Patients initially screening by rural general dentists
- Teledentistry consultations scheduled with board certified pediatric dentists
Interactive Teledentistry Consults

- Compile medical history from the caregivers
- Assess child behavior and temperament
- Observe child’s response to surroundings and non-invasive oral procedures
- Assess parenting style
- Discuss findings with family
- Plan future treatment with behavior guidance
- Arrange support from community health worker
Interactive Teledentistry Outcomes

- Reduce drives to metropolitan center
- Comparable behavior screening as in office screening
- Accelerated scheduling of consultations and treatment appointments,
- With support from community health workers, significant improvement in patient attendance and completion of identified treatment plans
- Rural general dentists more often attempted dental treatment
Teledentistry -- Univ. of Minnesota Physicians

- Currently in the project development phase – funding from Delta Dental of Minnesota foundation
- University of Minnesota School of Dentistry and the UMP Dental Clinics
- Will provide pediatric and adult clinical services
- Focus areas:
  - Expanding dental workforce into rural communities
  - Reducing hospital visits for dental related problems
  - Improved accessibility to dental consults for medically complex patients
- Patient site to specialist site (medical to dental; dental to medical; dental to dental)
Thank You For Your Attention!

We welcome your questions.
Online Resources

- Children’s Oral Health, American Academy of Pediatrics [LINK]
- American Academy of Pediatric Dentistry Guidelines [LINK]
- Management of Dental Trauma in a Primary Care Setting [LINK]
- Oral Health Care for Children with Developmental Disabilities [LINK]
- Evidence Based Recommendations Regarding Fluoride Intake From Reconstituted Infant Formula and Enamel Fluorosis [LINK]
- Topical fluoride for caries prevention: Executive summary of the updated clinical recommendations and supporting systematic review [LINK]
Online Resources

- Non-fluoride caries-preventive agents: Executive summary of evidence-based clinical recommendations  [LINK]
- Dental Trauma Guide  [LINK]
- Oral Health Care During Pregnancy: A National Consensus Statement  [LINK]
- An Essential Health Benefit: General Anesthesia for Treatment of Early Childhood Caries  [LINK]
- Interprofessional Study of Oral Health in Primary Care  [LINK]