Infant Oral Health in Rural Communities

Cultivating Resilient Communities

Rural Health Conference
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Oral health is essential to overall health

Oral health refers to the health of the entire mouth (oral cavity), including the jaw bones, teeth, gums, lips, inner lining of the lips and cheeks, the chewing muscles, roof and floor of the mouth, tongue, salivary glands, tonsils and adenoids (immune system), and pharynx (throat).

"...Oral health is much more than clean teeth...[It] refers to the health of our mouth, and ultimately, supports and reflects the health of the entire body."
-Surgeon General Regina M. Benjamin, M.D., MBA (2010)

Oral health means being free of chronic oral-facial pain conditions, oral and pharyngeal cancers, oral soft tissue lesions, birth defects such as cleft lip and palate, and other diseases and disorders that affect the oral, dental, and craniofacial tissues (craniofacial complex) such as:

- Tooth decay
- Gum disease
- Periodontitis
- Tooth loss
- Oral-dental trauma

The mouth can also reveal signs of poor nutrition and diseases. Research has shown associations between chronic oral infections and heart and lung diseases, stroke, preterm and low-weight births.
Data available on a variety of indicators
2015 data MN 3rd graders

- Third graders in rural schools were 1.3 times more likely to have or have had tooth decay than third graders enrolled in urban schools
Minnesota third grade public school students with tooth decay by rural/urban location, 2015

- Rural: 56.2%
- Urban: 44.3%

Data source: Minnesota Department of Health, Oral Health Program. Basic Screening Survey (BSS).
Note: Sample size = 3,199 third grade students. See About the Basic Screening Survey Data for more information.
Rural Dentistry 2.0 Project

- Rural Health Advisory Committee (RHAC)
- 6 month project
  - What is the current and projected landscape of rural dentistry in MN?
  - What will the next generation of rural dentistry need?
Snapshot: Oral Health Workforce

Source: Board of Dentistry, December 2013. Includes all professionals who have an active license and report practicing in Minnesota ("Active Practice In State." N=12,961). Of these, 5,819 were dental assistants; 4,101 were dental hygienists; 3,013 were dentists, and 27 were dental therapists.
Rural-urban Distribution of all Oral Health Providers in MN

<table>
<thead>
<tr>
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<td>Isolated</td>
<td>7%</td>
<td>6%</td>
<td>8%</td>
<td>4%</td>
<td>10%</td>
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<tr>
<td>Small Rural</td>
<td>6%</td>
<td>6%</td>
<td>4%</td>
<td>6%</td>
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<td>5%</td>
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<tr>
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<tr>
<td>Urban</td>
<td>76%</td>
<td>78%</td>
<td>85%</td>
<td>80%</td>
<td>70%</td>
<td>80%</td>
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</table>

Source: Minnesota Board of Dentistry, December 2013. Includes all providers who have an active license and report practicing in Minnesota and had a valid Minnesota mailing address. Does not include providers who report active practice in Minnesota with an out of state mailing address. Population distribution information for Minnesota and the U.S. comes from MDH calculations, and Agency for Healthcare Research and Quality, AHRQ Pub No. 12-P001-4-EF, respectively.
Age Distribution of Oral Health Providers

Source: Minnesota Board of Dentistry, December 2013. Includes all professionals who have an active license and report practicing in Minnesota (“Active Practice in State”).
Future Plans to Practice in Minnesota

Source: Minnesota Department of Health Workforce Survey, 2012-2013. Includes all dentists who have an active license, report practicing in Minnesota ("active practicing in state"), and who responded to the MDH workforce survey during their license renewal. Anywhere from zero to three percent didn’t respond to the question.
### Pipeline Data: Minnesota Education Programs

**2012-2013 graduates by program type**

<table>
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<tr>
<th>Program Type</th>
<th>Over 1 and under 4 years</th>
<th>4 years</th>
<th>Graduate Level</th>
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<td>-</td>
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<tr>
<td>Dental Hygienist</td>
<td>194</td>
<td>86</td>
<td>3</td>
<td>283</td>
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<tr>
<td>Dentist</td>
<td>-</td>
<td>-</td>
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<table>
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<tr>
<th>Dental Therapy Graduates</th>
<th>University of Minnesota</th>
<th>Metropolitan State/Normandale</th>
<th>Annual Total</th>
<th>Cumulative Total</th>
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<td>7</td>
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<td>-</td>
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<td>13</td>
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<td>2014</td>
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<td>5</td>
<td>14</td>
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<td>2015</td>
<td>6</td>
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<td>6</td>
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<tr>
<td>2016 (est.)</td>
<td>8</td>
<td>12</td>
<td>20</td>
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</table>

Source: Table 1: Minnesota State Colleges and Universities, LMI Wise, 2015. Dashes indicate education level doesn’t apply to profession. Table 2: University of Minnesota School of Dentistry, Karl Self 2015.
Summary

- Minnesota’s oral health professionals are concentrated in the metropolitan areas of the state.
  - 76% of dentists are “urban” (compared to 70% of the state’s population).
  - 1 dentist for every 1,676 people in urban areas
  - 1 dentist for every 3,853 people in “isolated rural” areas (the least populated areas of the state)
  - Similar trend for dental therapists: 85% urban to 8% in isolated rural areas

- Age. Among all oral health providers, dentists are the oldest group. Nearly half—43% actively practicing dentists are 55 or older. Rural dentists are slightly older than dentists in urban areas of the state.

Rural dentists are slightly older than dentists in urban areas of the state.
Policy Prescriptions

- Oral health professional shortage concerns are focused in isolated and small rural areas. Focusing efforts on new ways of better serving people in these areas could bring benefits.

- As younger dentists are less concentrated in solo private practice, efforts to support or transition solo practices as dentists retire, especially in rural areas, could be of value.

- It is worth noting the expanded roles that hygienists can play in providing care. Hygienists working with collaborative agreements with dentists can provide care with and widen dental services to non-traditional settings and increase services available.

- As the dental therapist profession grows, it can help fill gaps for the underserved (as intended by legislation) and support long term oral health needs of Minnesotans.

- Access issues can be eased by educational opportunities for hygienists to earn certificate in advanced dental therapy and Minnesota is the national leader.
Early Prevention Initiative

- **Statewide initiative to increase awareness**
  - Led by MDH
  - Communities of color and recent immigrants
  - Importance of early preventive dental intervention
  - Infants and toddlers
  - Before and after primary teeth appear
Community-based Interventions

1. Delay disease onset
2. Compress peak burden on healthcare infrastructure
3. Diminish overall cases and health impacts

[Diagram showing the effects of community-based interventions over time]
Fluoride Maintains the Balance

Inhibits demineralization
Enhances remineralization
Inhibits plaque bacteria
Community Water Fluoridation

Oral health equity begins with community water fluoridation

Healthy Communities

Build Healthy Families

ILikeMyTeeth.org
The Caries Balance

Demineralization

Remineralization

Cavities

No cavities
Partnership

University of Minnesota and Rice Memorial Hospital
Infant Oral Health in Rural Communities
Rice Regional Dental Clinic

This program is sponsored through a grant from Delta Dental of Minnesota Foundation.
17-County Service Area

15 of 17 have dental professional shortages
(Low dentist to population ratios)
West and Southwest Minnesota

- Big Stone
- Chippewa
- Kandiyohi
- Lac Qui Parle
- Lincoln
- Murray
- Pipestone
- Pope
- Redwood
- Renville
- Stevens
- Swift
- Traverse
- Lyon
- Yellow Medicine
- McLeod
- Meeker
First Tooth/First Dental Visit

HUGE paradigm shift

OLD SCHOOL – see dentist by age 2 or 3, after all the teeth are in.

NEW SCHOOL – see the dentist by the first birthday.
First Tooth/First Dental Visit

- 3.5-Year project
- Delta Dental of Minnesota Foundation
- Reduce and prevent oral disease in high risk children: ages 0-3
- Train dental students (DDS, DT, DH) from University of Minnesota School of Dentistry to perform infant oral exams
Rice Regional Dental Clinic Healthy Tomorrows Grant

- Utilize AAP *Bright Futures Guidelines for Health Supervision of Infants, Children and Adolescents, 3rd Edition.*
- Educate primary care providers about fluoride varnish and “Bright Futures Dental Risk Assessment Tool”
- Establish relationships with agencies
- Utilize culturally appropriate interventions
- Increase access to dental care for underserved children: 0-17 yrs.
Primary Care Survey Results

Baseline 14-question survey

Surveyed 370 primary care providers in 17 counties. 72 responded (20% rate)

- 87% discuss oral health at well child checks
- 77% discussed fluoride supplements. 60% were not applying fl2 varnish at this time
- 78% were not familiar with the Bright Futures tool and only 2% ever used it
- 66% indicate that they have seen young patients with cavities, decay and caries, poor hygiene, abscess, tooth pain, injury, thrush, plaque, etc.
- 24% referred by age 1, while 27% referred at age 3-5

Source: Survey RRDC 2014
Baseline Community Awareness Survey

Have you heard of the Rice Regional Dental Clinic in Willmar?

- No: 53%
- Yes: 47%

What type of effort do you think it takes to find free or low-cost dental care for children ages zero to 17?

- Lots of Effort: 33 responses
- Some Effort: 12 responses
- Little Effort: 12 responses

Source: Survey RRDC 2016
Early Childhood Caries

- The most common chronic childhood disease
- Untreated
  - Destruction of tooth structure
  - Inadequate tooth function
  - Unsightly appearance
  - Can affect speech, nutrition, growth and weight gain
  - Pain, infection
  - Greater likelihood of cavities in the permanent teeth
  - Can result in death
What Causes ECC?

Pathological (Destructive) Factors

- Destructive bacterial biofilm - transmissible
- Frequent ingestion of simple carbohydrates
- Reduced salivary function
- Individual susceptibility

Protective Factors

- Fluoride
- Anti-bacterials
- Oral hygiene habits
- Flow and composition of saliva
- Structure of tooth minerals in each individual
- Dental Sealants
Role of Primary Care Physicians

- Prenatal Visit
- Cavities
- Poor oral hygiene
- Inflamed gingiva
- Loose teeth
- Frequency of sugar intake
- Referral
- May qualify for MA or MNHCP
Primary care visit (well baby check)

- See the children frequently
- Risk assessment
- Dental screening
- Counsel caregivers
- Apply preventive strategies
- Referral
- Follow C&TC guidelines

Photo credit RRDC
WHO?

According to AAP, AAPD, ADA:

- Mothers with a high caries rate
- Special health care needs
- Demonstrable caries, plaque, demineralization, and/or staining
- Sleep with a bottle or breastfeed throughout the night
- Families that are Medicaid eligible
- ALL CHILDREN BY AGE 1

Photo credit RRDC
Healthy Tomorrows Risk Assessment Tool

- Adopted from 2003 AAP Policy Statement
- All children should undergo an oral health risk assessment beginning at 6 months of age
- Referred to a DDS for Dental Home
- Dental HOME: 6-12 months
Oral Health Self Management Goals for Parents/Caregivers from Bright Futures

A. Children with special health care needs are those who have a physical, developmental, mental, sensory, behavioral, cognitive, or emotional impairment or limiting condition that requires medical management, health care intervention, and/or use of specialized services. The condition may be developmental or acquired and may cause limitations in performing daily self-maintenance activities or substantial limitations in a major life activity. Health care for special needs patients is beyond that considered routine and requires specialized knowledge, increased awareness and attention, and accommodation.

B. Alteration in salivary flow can be the result of congenital or acquired conditions, surgery, radiation, medication, or age-related changes in salivary function. Any condition, treatment, or process known or reported to alter saliva flow should be considered an indication of risk unless proven otherwise.

C. Orthodontic appliances include both fixed and removable appliances, space maintainers, and other devices that remain in the mouth continuously or for prolonged time intervals and which may trap food and plaque. Prevent oral hygiene, compromise access of tooth surfaces to fluorides, or otherwise create an environment supporting caries initiation.

D. National surveys have demonstrated that children in low-income and moderate-income households are more likely to have caries and more decayed or filled primary teeth than children from more affluent households. Also, within income levels, minority children are more likely to have caries. Thus, socioeconomic status should be viewed as an initial indicator of risk that may be offset by the absence of other risk indicators.

E. Examples of sources of simple sugars include carbonated beverages, cookies, cake, candy, cereal, potato chips, French fries, corn chips, pretzels, breads, juices, and fruits. Clinicians using caries-risk assessment should investigate individual exposures to sugars known to be involved in caries initiation.

F. Optimal systemic and topical fluoride exposure is based on use of a fluoride dentifrice and American Dental Association/American Academy of Pediatrics guidelines for exposure from fluoride drinking water and/or supplementation.

G. Unsupervised use of toothpaste and at-home topical fluoride products are not recommended for children unable to expectorate predictably.

H. Although microbial organisms responsible for gingivitis may be different than those primarily implicated in caries, the presence of gingivitis is an indicator of poor or infrequent oral hygiene practices and has been associated with caries progression.

I. Tooth anatomy and hypoplastic defects (e.g., poorly formed enamel, developmental pits) may predispose a child to develop caries.

J. Advanced technologies such as caries-risk assessment and microbiologic testing are not essential for using this tool.
**MDH C&TC Periodicity Schedule**

**Schedule of Age-Related Dental Standards**

In keeping with the American Academy of Pediatric Dentistry recommendations, a child's first examination should be completed at the eruption of the first tooth in the mouth or no later than 12 months of age. Repeat every 6 months or as indicated by the child's risk status/susceptibility to disease. [Visit this link](http://www.aapd.org/media/policies_guidelines/p_carieriskassess.pdf) for more information.

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<th>Components</th>
<th>Age</th>
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<th>2 – 6 yrs</th>
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1. The child’s history, clinical findings and susceptibility to oral disease should determine the timing, selection and frequency.
2. When systemic fluoride exposure is suboptimal, up to at least 16 years of age.
3. Appropriate discussion and counseling should be an integral component of each visit.
4. At every visit; initially discuss appropriate feeding practices; then the role of refined carbohydrates and frequency of snacking in caries development and obesity.
5. Should include counseling on toys, pacifiers, ear seat use and passenger restraints, routine playing, sports and mouthguards.
6. Should include counseling on the additional need for sucking: fingers vs pacifiers; then the need to wean from the habit before malocclusion or skeletal dysplasia occurs. For school-aged children and adolescents, counsel regarding habits such as nail biting, chewing and grinding.
7. For caries susceptible posterior teeth with deep pits and fissures; placed as soon as possible after eruption. Coverage for sealants is limited to recipients through age 18 on first and second permanent molars.

Developed jointly by the Minnesota Departments of Human Services and Health.
Delta Dental First Visit by Age
https://dentistby1.com/deltadental/
The First Dental Home

• Ongoing relationship between the dentist and the patient to provide oral health care that is:
  • Comprehensive
  • Continuously accessible
  • Coordinated
  • Family-centered
• Includes referral to dental specialists when appropriate

Photo credit RRDC
Infant Oral Exam

- Caries risk assessment
- Examination
- Prophy—toothbrush cleaning
- Fluoride varnish application
- Anticipatory guidance, counseling and self-management goals
What is Fluoride Varnish?

- Highly concentrated topical fluoride treatment
- Holds fluoride close to the tooth surface for long periods of time (1-7 days)
- Can reverse white spot lesions (early cavities)
- Effective for children and adults
- Recommended dosage every 6 mos, or every 3 mos for high risk

Photo credit: Indian Health Service
Early Childhood Caries is Preventable

Photo credit RRDC
Marketing Strategies

Rice Regional Dental Clinic

- “First Tooth, First Dental Visit” brochure/coupons
- “First Tooth, First Dental Visit” gift bags
- Fluoride varnish cards
- Education to Primary Care providers
- Education to families, Health fairs
- Gift packet for newborns/parents
- ONE YEAR birthday card reminder
- Give Kids a Smile
- Window displays at library, grocery
- Just added RADIO advertisement

Photo credit RRDC
Where are the Babies?

- Developed marketing materials
- June 2014 began mailings through Child and Teen Checkups (C&TC), 6 mos (brochure) and 9 mos (coupon)
- June 2014 mailed letter to all dentists in West-Central MN
- 2014: 37 one year olds (0 seen in 2013)
- Goal was to see 800+ in Year 1
- Expand marketing
Labor and Delivery/Pediatrics Rounds

- Dental Hygiene students
- Education
- Hands on education
- Dietary guidelines
- Water sources
- Bottle to cup
- Limit sweet diet sources
- ANSWER QUESTIONS
Rice Regional Dental Clinic Patient visits - children

Source: RRDC Caries Risk Assessment data
What have we learned?

Engage other providers
Community advisory boards
Primary care providers are key
Open communication to Dental community
Support alternative providers, ADT, DHCP
Hands-on learning
Partnerships/collaboration

ADVERTISE
Why a Dental Home by Age 1?

• Age 2-3 is too late: children from lower socioeconomic groups already have caries

• Bad habits are hard to break - educating parents and families is a key component of the infant oral health visit

• Lower health care costs

• Affordable Care Act

Photo credit RRDC
Questions?

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- Health Resources and Services Administration –Healthy Tomorrows
- Maternal Child Health Bureau at HRSA/HHS/AAP Bright Futures
- Delta Dental of Minnesota Foundation
- Indian Health Service (slides 40)
- Minnesota Department of Health