

American Indian Research Forum Health Research Needs in Indian Country

Photo: Bruce Hildebrand



Early Childhood Caries Research in Manitoba

Robert Schroth, DMD, MSc
University of Manitoba
April 19, 2007

Early Childhood Caries (ECC)



- Tooth decay is most common chronic disease of early childhood **(5X more than asthma)** US Dept Health & Human Services 2000
- Increased caries experience throughout childhood Peretz B et al Pediatr Dent 2003, Li Y & Wang W J Dent Res 2002
- Decay at early ages can cause problems such as:
 - Difficulty eating, speaking and sleeping
 - Reduced oral health quality of life
 - Pain & infection
 - Affected growth

Filstrup SL et al Pediatr Dent 2003,
Low W et al Pediatr Dent 1999,
Acs G et al Pediatr Dent 1992

How do we define ECC?

Early Childhood = Infant (0-23 months) + Preschool child (24 –71 months)

Early childhood caries (ECC) is defined as ≥ 1 primary tooth affected by decay in infant and preschool children



Nursing caries
Nursing bottle syndrome
Bottle mouth syndrome
Sugared tea caries

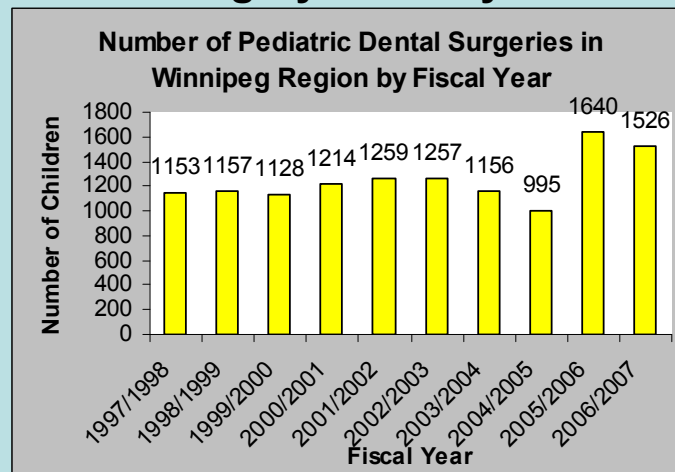
Baby-bottle tooth decay
Rampant caries
Night bottle mouth
Milk bottle caries

Why is ECC such a problem?



- General anesthesia often necessary
- Expensive to treat (i.e. travel, facility fees, dental fees)
- Increased risk of cavities throughout childhood
- Prevalent in Manitoba especially among Aboriginal children – large waiting list for tx

How many young children have dental surgery annually?



Source: Winnipeg Regional Health Authority, Oral Health Program, November 2006

Schroth RJ, Morey B. Providing timely dental treatment for young children under general anesthesia is a government priority. *J Can Dent Assoc* 2007; 73(3): 241-3.

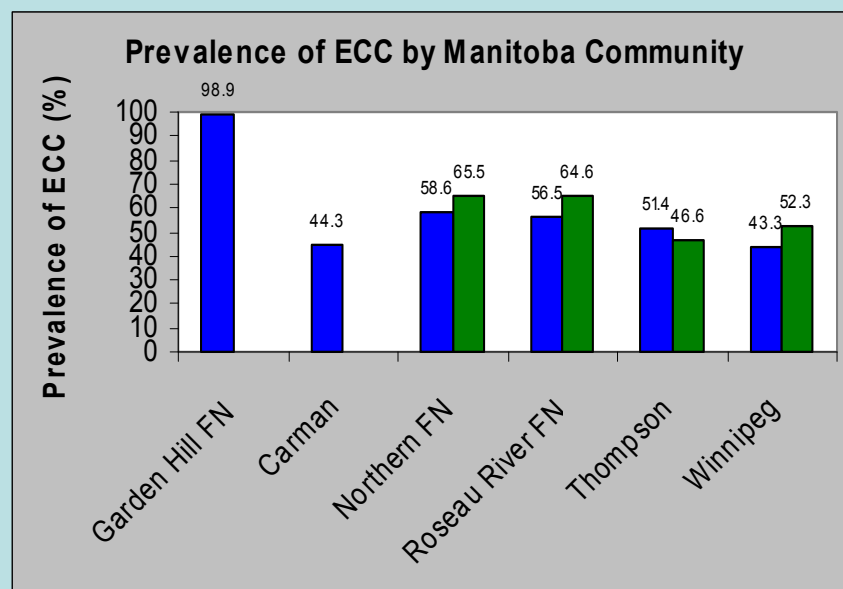
Risk Factors for ECC

- Age of child
- Socioeconomic status
- No water fluoridation
- Sugar intake/snacking habits
- Oral hygiene & late initiation of brushing
- Enamel hypoplasia
- Streptococcus mutans
- Pregnancy complications
- Not breastfeeding
- Bottle feeding habits
- Bedtime bottle
- Prolonged non-nutritive breastfeeding
- Delayed first dental visit & limited access to care
- Parental knowledge & attitudes
- Child temperament
- Ethnicity
- Parental education level

Plus Many Others

What are we doing in Manitoba?

- ECC prevalence studies in Manitoba
(Aboriginal, First Nations, Hutterite Colonies, low-income communities)
- Do prenatal vitamin D deficiencies influence infant/preschool oral health?
- Healthy Smile Happy Child Project
(Innovative early childhood oral health promotion project based on community development principles)



Determinants of ECC in Manitoba

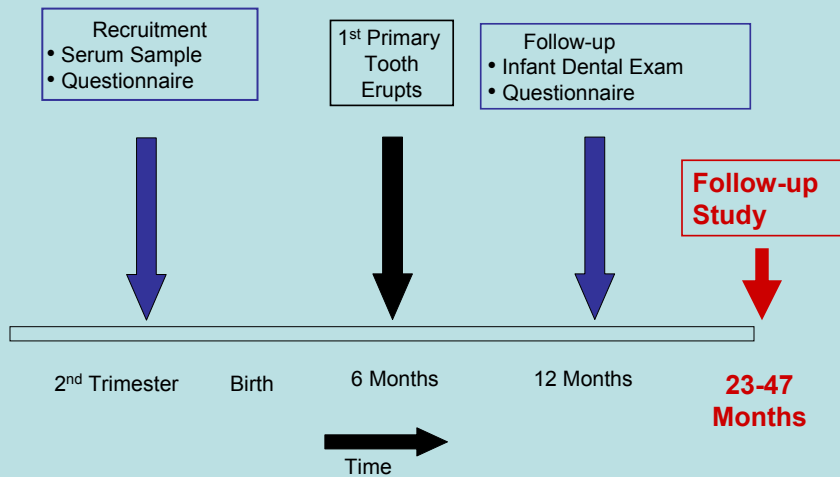
- Sugar added to bottle
- Bottle-feeding
- Breastfeeding protective against caries
- Plaque/debris levels
- Age of child
- Socioeconomic status (fridge in house)
- Low maternal education
- No difference in prevalence (on-Reserve First Nations vs. disadvantaged urban community)



The Pregnancy Connection

- Primary teeth begin to form as early as 6 weeks & start to calcify during the 2nd trimester
- Problems during pregnancy (malnutrition, premature birth, maternal diabetes, prenatal infections) may interfere with dental enamel formation predisposing enamel hypoplasia (EH) and DDEs
- Enamel hypoplasia is a risk factor for ECC

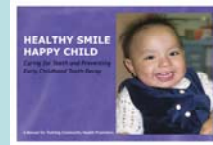
Vitamin D and Infant Oral Health



- Began in 2000 in response to wait list for dental Sx
- Clinicians, researchers/academics, & policy-makers (Multi-disciplinary, multi-agency approach using Community Development)
- 3 Pillars:
 - Community Development
 - Oral Health Promotion/ECC Prevention
 - Evaluation/Research
- 4 pilot communities
 - 2 First Nations
 - 2 urban centres



- To gain community acceptance of the importance of early childhood oral health
- To build on existing programs which target young children
- To increase parental knowledge of ECC prevention
- To increase the knowledge of existing service providers (i.e. public health) of the importance of prevention of ECC
- To encourage existing service providers to incorporate ECC prevention activities into their practice



Baseline Study



- 4 pilot sites selected
 - (2 northern and 2 southern)
- Cross-sectional design
- Children < 72 months of age & caregiver
- Dental examination following established indices
- Interviewed questionnaire with caregiver
- $p \leq 0.05$ denoted significance

Schroth RJ, Moore P, Brothwell DJ. Prevalence of early childhood caries in 4 Manitoba Communities. J Can Dent Assoc 2005; 71(8): 567.



Knowledge Transfer of Research Findings

Profiles were compiled for each community



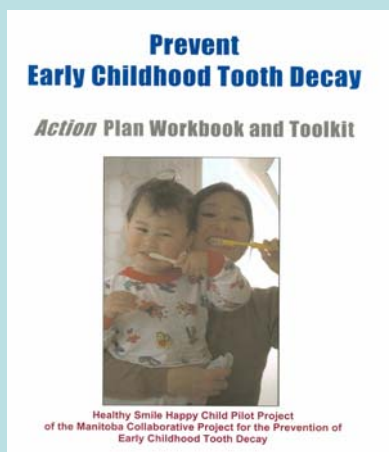
Key risk factors for ECC in their community were shared with them



Assisted with community-based oral health promotion strategies



Community Developed Resources

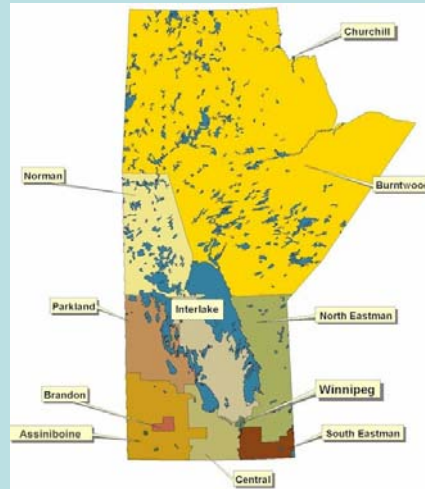


<http://www.wrha.mb.ca/caring/preventill/oral.php>



Community Facilitators

- 1 Project Coordinator
- 5 Community Facilitators:
 - Burntwood & Churchill
 - NOR-MAN & Parkland
 - Central, Assiniboine, & Brandon
 - North Eastman & South Eastman
 - Winnipeg & Interlake

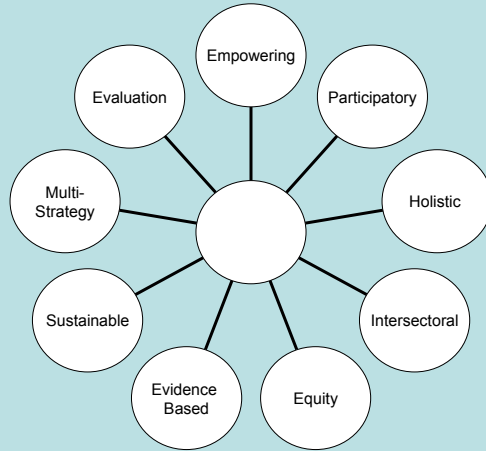


- Provide local capacity building workshops
- Enable community action and activities (building capacity) within existing programs which support the incorporation of ECTD knowledge
- Identify local opportunities to deliver workshops
- Build relationships with local programs
- Follow up with workshop participants to encourage and support use of the materials provided
- Participate in follow up contacts will all engaged groups and services





WHO Criteria for Oral Health Strategies



Why are we doing this?



- Improve early childhood oral health
- Reduce the number of children with ECC needing dental surgery
- Identify potential preventive interventions

Aboriginal Early Childhood Oral Health Research Needs:



- Quality of Life
 - Studies on nutrition & preschool oral health/ECC
 - Documenting pain among children with severe-ECC
- Qualitative Research
 - How do Aboriginal communities view ECC?
- Participatory Research
 - How to engage communities in research and build research capacity? Letting the community develop research questions
- National Networks
- Translating Research Evidence into Policy



Oral Health and the Aboriginal Child:
A forum for community members, researchers,
and policy-makers

Acknowledgements

- Manitoba Institute of Child Health
- Canadian Child Health Clinician Scientist Program (CCHCSP)
- Manitoba Medical Service Foundation
- Dentistry Canada Fund
- Manitoba Health
- Faculty of Dentistry, University of Manitoba
- Dairy Farmers of Canada
- Canadian Institutes of Health Research
- Winnipeg Foundation
- Foundation of the Pierre Fauchard Academy
- University of Manitoba
- Health Canada, First Nations and Inuit Health Branch
- Winnipeg Regional Health Authority
- Manitoba Dental Association
- Dr. Michael Moffatt, Jeanette Edwards, Dr. Doug Brothwell, Dr. Bernadette Mellon, Dr. Chris Lavelle, Plus Many Others

