ORAL HEALTH IN NUNAVUT
WHERE IS NUNAVUT?
CANADA’S MOST NORTHERN TERRITORY
NUNAVUT.... BY A 7 YEAR OLD
- One of the most remote and sparsely populated areas in the world
- Population: 37,000 (85% Inuit)
  - Half the pop is < 21 years of age
  - Number of children 7 and under approximately 7000 and growing quickly
- Land Mass: 1,877,787 sq. km - largest in Canada
- Number of communities: 25 - all isolated
- Languages: Inuktitut, English, French, Inuinnaqtun
- Weather - polar climate, difficult and unpredictable
- No road access
- A new territory with a young government
Inuit Oral Health Survey (IOHS) 2008

- An adjunct to the Oral Health Module - Canadian Health Measures Survey 2008
- Provided estimates of the burden of oral health conditions across Canada’s north (excluding Nunavik)
- Unique in that children as young as 3 years of age were included.
- 6 communities surveyed (not all in Nunavut)
- In total 1216 Inuit were examined-aged 3-40+ years

HOW DOES ORAL HEALTH IN NUNAVUT COMPARE TO THE REST OF THE COUNTRY?
Prevalence of dental caries was very high in all age groups.

- 85% of preschoolers had dental caries
- 97.7% of adolescents had dental caries
- 100% of oldest adults had been affected
- Much of the disease remained untreated, particularly amongst the younger age groups.
Results in 3-5 year olds (primary dentition):

- 85% of children surveyed have or have had dental caries experience.
  -- 30% of decayed teeth had been treated (filled).
- 50% of decayed teeth were still untreated.
- For every 100 teeth that had been restored 78.5 had been extracted.
EARLY CHILDHOOD CARIES (ECC)

- The American Academy of Pediatric Dentistry (AAPD) has defined ECC as “the presence of 1 or more decayed, missing or filled tooth surfaces in any primary tooth in a child 71 months of age or younger”.

- By this definition, almost every Inuit child in Nunavut suffers from ECC.
Results in 6-11 year olds (mixed dentition)
- 93.5% had dental caries experience
- Males (97.5%) effected more than females (89.6%)
- 44% had been restored
- 55% of decayed teeth had not been treated
- For every 100 teeth restored, 53 had been extracted
Nationally, children 6-11 years of age have DMFT/dmft scores of 2.5 (decayed, missing or filled teeth) on average, whereas Inuit children the same age typically have scores of between 7 and 12.
Adolescents aged 12 -19
- 96.7% had or had experienced dental caries
- No differences by gender
- Fewer decayed (38.1%) and more filled teeth (51.5%) compared to younger age groups.
- For every 100 teeth filled, 20 had been extracted.
Adults

- 99-100% had been affected by dental caries
- No significant differences by age or gender
- For every 100 teeth restored, 105 had been extracted.
- 59% had untreated coronal caries and 33% had untreated root caries.
DO WE NEED TO BE CONCERNED ABOUT POOR ORAL HEALTH?
WHAT ARE THE POSSIBLE CONSEQUENCES OF UNTREATED DENTAL DISEASE?

- Pain
- Inability to eat comfortably
- Inability to speak properly
- Inability to sleep
- Risk of serious facial infection
- Risk of serious systemic disease
- Long term use of pain medications and antibiotics

- Costs
- Social issues
Poor oral health can result in a great deal of pain and suffering that cannot always be alleviated in a timely fashion.

Patients in Nunavut may have to wait months and sometimes years to receive treatment.
Poor oral health has been associated with many serious general health problems:

- Diabetes;
- Respiratory disease;
- Serious systemic infections;
- Sleep disorders;
- Cardiovascular disease.

Oral health and overall health are inextricably linked.
Oral organisms have been linked to infections of the endocardium, mediastinum, vertebrae, hepatobiliary system, lungs and prosthetic joints.
Uncontrolled dental diseases can lead not only to serious morbidity and mortality, but also considerable avoidable health care costs.

In Nunavut, a single GA case for a child with serious dental caries cost approximately $10,000 to treat.

The number of children on the GA List at any given time is typically 500-600

Total dental costs/year >$20,000,000
DENTAL SERVICE PROVISION/YEAR-NUNAVUT

- Dental Service Contractor days
  - GP’s - 1703 days
  - Specialists 129 days
  - Denturists - 429 days
- GA days
  - Churchill + Iqaluit – 85 days
- Dental therapists
  - 5 therapist – 900 days
- Private clinics
  - 500-1000 days
- Trips south

Total Service days: approx. 4,200 days + services in the south
NUMEROUS REPORTS HAVE BEEN PUBLISHED, AND CONTINUE TO BE PUBLISHED REGARDING ORAL HEALTH IN NUNAVUT

- Canadian Oral Health Strategy 2010
- An Inuit Oral Health Strategy 2008
- Pan Territorial Oral Health Initiative Report 2007
- First Nations and Inuit Oral Health Strategy (draft) 2011
- Inuit Oral Health Survey 2008-2009
- Inuit Specific Oral Health Strategy
- Inuit Oral Health Action Plan 2013
- Improving Access to Oral Health Care in Canada 2014
- Etc. etc. etc.
In spite of all the surveys done, all the money spent, all the services rendered, and all the reports written,

Oral health is not improving......
Why are the disease rates still so high in Nunavut?
Poor diet and nutrition

- Food insecurity
- Poor food choices
- High food costs
- Heavy consumption of acidic/sugared beverages
Poor Oral Hygiene
Lack of communal water fluoridation

- One of the 10 most effective public health measures of the 20th century (CDC)
- Only 3 communities in Nunavut are fluoridated
- It is not clear that people drink tap water regularly
- Misconceptions about and fear of using fluoride
Social problems

- Inadequate housing
- High Unemployment
- Poor infrastructure
- Drug/alcohol dependency issues
- Lack of education
- Poverty
- Literacy
- Food security
- Exposure to violence
- High School graduates
  - Average 2004-2014: 228/yr. on average
  - More females than males

- University enrollment:
  - In 2010/2011 only 279 students were enrolled in post secondary educational institutions

- Housing issues:
  - 50% live in houses that are either over crowded or in need of major repair.
  - Only 20% of people own their own homes.
General health issues

- High rates of:
  - diabetes,
  - heart disease,
  - cancer,
  - and mental health issues
Existing Model of service provision

- No real plan in place for dealing with prevention of dental disease
- Dental Care is viewed as a Health Canada responsibility – NIHB
- Most dental services are delivered by Contractors-fee for service model-profit motive
- Dental therapists-a disappearing breed in Canada- closure of the N.S.D.T. in 2011
- Hygienists are underemployed.
- Ineffective prevention programmes-brushing, fluoride mouthrinse, but no oversight or coordination
Parents often do not bring young children to the dentist or nurse unless they are in pain.

Oral disease is not considered a serious issue by many health care workers.

Most children with serious dental problems are referred for GA.

Parents consider dental treatment under GA normal, even desirable.
There are many excellent programs dealing with dental health issues, but there is little communication between these groups.

- Fee for service dentists, Dental therapists, Dental Hygienists
- Regional Health Boards
- Children’s Dental Programmes
- Community Health Programmes (CPNP, AHS, CAPC, BF, BHC, ADI)
- Nutrition programmes
- COHI (Health Canada)
- NIHB
- Other health disciplines-physicians, nurses, public health.
Culture
The prevalence of numerous administrative, cultural, health and social issues, means that oral health is not always considered a priority in Nunavut.

NIHB (Federal Government) is generally held responsible for oral health service delivery.
POOR ORAL HEALTH IS A MULTIFACTORAL PROBLEM
TRADITIONAL APPROACHES TO DENTAL CARE HAVE NOT SOLVED THESE PROBLEMS.
“Oral health conditions cannot be treated away, even if more resources could be applied. More emphasis (should be placed) on community based primary preventive measures backed up by early detection and prompt basic treatment”

IOHS

Threats to health such as high rates of tobacco use, crowded housing and food insecurity…..need to be addressed for preventive dental efforts to have maximal effect. IOHS
IS THE SITUATION HOPELESS?
ITK INUIT ORAL HEALTH ACTION PLAN 2013
HEALTHY TEETH - HEALTHY LIVES
ACTIONS

- Strengthen leadership
- Link oral health to overall health
- Increase focus on preventive initiatives
- Improve treatment
- Engage and mobilize parents and caregivers
- Engage and mobilize adolescents
- Increase the number of Inuit oral health service providers
- Improve use of and access to affordable nutritional foods.
- ??????
Parity with Canadian norms for dental disease
50% of children enter school without a cavity
Appropriate prevention, promotion and treatment available
Awareness of the link between oral health and general health
Support for families in achieving improved oral health outcomes
WHAT ACTIONS ARE WE TAKING?
ESTABLISHING LINKS AND WORKING WITH OTHER HEALTH CARE PROVIDERS AND AGENCIES

- Fee for service dentists,
- Dental therapists,
- Dental Hygienists
- Children’s Dental Programmes (Yukon)
- Community Health Programmes (CPNP, AHS, CAPC, BF, BHC, ADI)
- Territorial Nutritionists
- Day cares
- COHI (Health Canada)
- NIHB
- Other health disciplines
NUNAVUT CHILDREN’S ORAL HEALTH PROJECT
SHORT TERM GOALS-OHP

- Provide exams/assessments for all children age 0-7
- Provide OHI instruction to children and parents/caregivers.
- Provide fluoride varnish 2x yearly to all children.
- Provide sealants, IST, and extractions as required.
- Ensure that this age group is free of dental pain and infection
- DMFT/PUFA for all 6 year olds in 8 of the communities
to produce a co-operative, co-ordinated approach to the provision of preventive services and treatment modalities, in order to provide sustainable and measurable improvements in oral and general health amongst the 0-7 age group.
Distribution of healthy foods for participation in the OHP
Use of social media-Facebook and a dedicated GN Oral Health Website
Rewards for children and parents for attending appointments
Regular Public Service announcements
Locally hired and trained Community Oral Health Coordinators in every community
Full time Oral Health Promotion Officer
PROVISION OF PREVENTIVE SERVICES

- regular fluoride varnish application (2x yearly) and sealant application are effective interventions
INTERIM STABILIZATION THERAPY (IST) EFFECTIVENESS?
IN THE CONTEXT OF NUNAVUT EVIDENCE IS STILL REQUIRED FOR:

- The best way to deliver clinical services.
  - Fee for service dentists?
  - Salaried/per diem dentists?
  - Dental therapists?
  - Hygienists?
Most appropriate use of dental materials:
- GI
- Amalgam
- Composite resin
Role of nutrition in dental health,
specifically vitamin D deficiencies
Effectiveness of the use of chemotherapeutic agents;

- Chlorhexidine,
- Betadine

in controlling caries in young children.
Effectiveness of

- Interim Stabilization Therapy (IST)
- Atraumatic Restorative technique (ART)

using glass ionomer cements in controlling rampant caries in children and adults
- Use of combination therapies
  - fluoride,
  - anti-microbials,
  - glass ionomers,
  - sealants
Long term benefits/dangers regarding treatment for young children under GA

- Evidence of long term cognitive impairment in young children who receive multiple GA’s (CADTH review)
Effective, culturally specific methods of Oral Health Promotion and Education

- Respecting Inuit cultural values
- Taking into account the realities of life in Nunavut
“WE WANT TO ENSURE PEOPLE UNDERSTAND THAT GOOD ORAL HEALTH IS A PUBLIC HEALTH ISSUE....THAT THE MOUTH IS THE GATEWAY TO THE BODY AND A HEALTHY MOUTH AND TEETH ARE IMPORTANT FIRST STEPS IN GOOD OVERALL HEALTH”

INUIT NON-INSURED HEALTH BENEFITS WORKING GROUP (INUIT CAUCUS) 2012
By far, the most commonly encountered oral diseases are Dental caries and Periodontal infection.

Both of these disease entities are chronic, transmissible, and both are preventable.
Dental disease is a particularly significant problem amongst young children.
THERE ARE NUMEROUS INFECTIOUS DISEASES THAT MANIFEST IN THE MOUTH...

- Dental caries
- Periodontal disease
- Herpes type 1
- Syphilis
- HIV
- Fungal infections
- HPV
SERVICES PROVIDED BY THE PROJECT

- Annual Screenings
- Dental sealants
- Exclusive use of glass ionomer cements for restorations (IST)
- Fluoride varnish applications 2x yearly to all children
- Extractions only when essential
- Health promotion
PROJECT GOALS

- Reduce (eliminate) pain and infection in children birth to age 7
- Provide increased access to prevention and treatment in the short term
- Improve parents knowledge of the importance of good oral health
- Reduce the GA waitlist
WE ARE HOPING THAT BY USING THE BIOMIMETIC CONCEPTS OF CONSERVATIVE REMOVAL OF TOOTH STRUCTURE, DENTINAL AND PULPAL HEALING WILL OCCUR.
In spite of all the money spent, all the services rendered, all the surveys done, and all the reports written,

- Oral health is not improving, particularly amongst young children
COMPONENTS OF THE ORAL HEALTH PROJECT

- providing access to care
- Starting early
- Sustainability
- Integration with other programmes
- Community involvement
- Accountability for cost effectiveness
- Culturally appropriate
- Participatory and collaborative
CULTURE

- IQ- Inuit Qaujimajatuqangit (values)
  - Respecting others, relationships and caring for people
  - Fostering good spirit by being open, welcoming and inclusive
  - Serving and providing for family and community
  - Decision making through discussion and consensus
  - Working together for a common cause
  - Being innovative and resourceful
MATERIALS
Fluoride ingested during tooth development makes teeth slightly smaller with shallow fissures and decreased cusp heights.

Effects of fluoride

- Increases resistance of enamel to caries.
- Increases rate of post operative maturation.
- Enhance remineralization of incipient caries.
- Interferes with bacterial enzymatic process and prevents bacterial adhesion.
- Modifies tooth morphology when ingested during tooth development.
there is evidence that multiple GA’s in young children (<4 years) may have detrimental long-term cognitive effects (CADTH)
SEALANTS
5. Pit and fissure sealants

- Fluorides are less effective in preventing pit and fissure caries.
- Sealants have 4 important preventive effects:
  - Mechanically fills pits and fissures with an acid resistant resin.
  - Deny cariogenic organisms their habitat.
  - Render pit and fissure easier to clean.
  - Arrest incipient carious lesion.
“Sealants have been shown to be effective to have long-term retention to cause regression of active lesions, and to be superior to amalgam restoration in terms of time requirements.”

**Indications**

- High risk for caries patients.
- Recently erupted molars with deep, retentive pits and fissures.
- Teeth with signs of incipient occlusal caries.
- Adult patients with suspicious fissures.

**Types**

1. Glass ionomer sealants (type iii)
2. Resin sealants
Conventional glass ionomers are derived from aqueous polyalkenoic acids such as polyacrylic acid, and a glass component that is usually fluoroaluminosilicate.
PROPERTIES

- Sets with an acid base reaction resulting in a long term stable ionic bond to tooth structure
- Ionoic exchange continues through the lifetime of the restoration resulting in a dynamic bioactive interaction between the material and the tooth.
- Long term Fluoride release and antimicrobial properties
- Minimal post operative sensitivity
• Incomplete removal of caries can be beneficial in terms of risk of pulpal exposure, post operative pulpal symptoms, overall failure and caries progression especially in cases of deep carious lesions.

• The risk of failure is similar in complete or incomplete excavation of carious material.
DISADVANTAGES

- Difficult to handle
- Water soluble initially
- Slow setting time
- Relatively low strength
- Not effective in cases where the pulp is infected
- Not effective when tooth is spontaneously painful
PROTOCOL

- No anaesthseia
- Remove infected dentin
- Clean margins
- Use hand instruments
- Leave affected dentin undisturbed
- Apply glass ionomer
- Allow healing to occur
- Definitive restoration?
PLANNING/LOGISTICAL ISSUES

- Language (translation)
- Jurisdiction
- Equipment
- Supplies
- Consent how long, how many
- Communications
- 25. vs. 5
- Staffing-JD, pay, training
- Recording-forms, forms, forms
- transportation,
- Scheduling
- Turf wars
- Space
- Timelines
- Legal
- Contracts
- legislation
Adolescents aged 12 - 19

- 96.7% had or had experienced dental caries
- No differences by gender
- Fewer decayed (38.1%) and more filled teeth (51.5%) compared to younger age groups.
- For every 100 teeth filled, 20 had been extracted.
- We are
  - looking for a new project manager
  - looking for 1 TCOHC
  - Looking for 2 COHC’s
  - continuing our relationship with CDHA
  - very well funded by HC until 2017
  - expanding our presence in Nunavut
MATERIALS

- Fluoride
- Glass ionomer (IST)
- Sealants
7. Nunavut Children’s Oral Health Programming Logic Model

Goals

- Oral health of children 0-7 has stabilized through intervention of IST and extractions
- Improvement in the oral health of children 0-7 over 5 years as measured by a 20% reduction in pufa/PUFA prevalence and 15% reduction in DMFT/dmft prevalence.
- Families are supported in achieving better oral health outcomes through prevention measures, education, resources and supplies.
- Improvement in availability of community-level oral health capacity and leadership.

Objectives

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<tr>
<th>Oral Health Services</th>
<th>Oral Health Promotion</th>
<th>Capacity Building – COHCs</th>
<th>Oral Health Assessment</th>
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<tr>
<td>To provide immediate treatment in the short term to stabilize the oral health of children 0-7 in all Nunavut communities.</td>
<td>To integrate oral health programming into areas of health promotion which involve children 0-7 and their parents/guardians.</td>
<td>To provide every Nunavut community with a COHC or COHI aide representative.</td>
<td>To create baseline of pufa/PUFA and dmft/DMFT scores from 8 selected communities plus Iqaluit of children ages 5 and 6.</td>
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<td>To provide early oral health prevention services to children through sealants, fluoride applications, and visits to oral health provider.</td>
<td>To develop and update resource materials and curriculum for oral health promotion.</td>
<td>To ensure that COHCs receive comprehensive training and follow-up support in accomplishing their roles and responsibilities.</td>
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<td>To introduce/maintain preventative measures.</td>
<td>To ensure that COHCs are confident in their ability to organize and mobilize their community around oral health prevention and promotion activities.</td>
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<td>To improve oral health knowledge of communities.</td>
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Inputs

PHAC and HC NR funding and GN

Activities

**Oral Health Prevention Services**
- Early intervention preventative services techniques such as sealants and fluoride varnishes.
- Dental screening (by dentist - 1st screening).
- Development of treatment plans.
- Temporary restorations.
- Urgent treatment, and if necessary, GA.

**Oral Health Promotion**
- Development of resources and curriculum.
- Oral hygiene instruction during treatment sessions.
- Training for those involved with programs for children focusing on tooth brushing and flossing.
- Supervised brushing programs in schools and daycares.
- Oral health education in schools and daycares.
- Oral health promotion integrated into existing nutrition, tobacco, prenatal and parenting programs.

**Capacity Building – COHCs**
- COHCs hired for all Nunavut communities lacking COHI Aides.
- COHC training.
- Ongoing Departmental support for COHCs.
- COHCs implement oral health promotion, assisting dental therapists, coordination of consent forms, fluoride treatment, running tooth-brushing program, and building community partnerships focusing on oral health.

**Oral Health Assessment**
- Oral health status is measured in 8 representative communities, plus Iqaluit, at 2 different times between 2014 and 2019.

Outputs

**Screenings**
- Sealants
- Temporary restorations.
- Fluoride varnish applications
- Urgent dental care / GAs

**Promotion resources, activities and sessions**
- Oral health supplies/kit
- Manuals (teaching teeth, dental health, COHC training, Lift the lip, drop the pop)
- You and your baby kit
- Partnerships
- Training sessions

**COHCs hired**
- Training sessions for COHCs
- Support (communications/feedback) for COHCs

**Surveillance data**
CONTACT INFORMATION

- Email: rkippes@cdha.org
- Telephone: 867-222-0288
- Or
- Contact Victoria Leck at the CDHA
Adolescents aged 12 -19

- 96.7% had or had experienced dental caries.
- No differences by gender.
- Fewer decayed (38.1%) and more filled teeth (51.5%) compared to younger age groups.
- For every 100 teeth filled, 20 had been extracted.
CURRENT LEVELS OF SERVICE PROVISION