Streptococcus mutans and Dental Caries in Native American Children

Dr. David Drake
Goal of the Study

- The overall goal of this study is to identify risk factors for ECC in American Indian children.
- Our hypothesis that there are particularly virulent genotypes of *Streptococcus mutans* (SM) that are readily transmitted from mother to child.
OST SMILES Study

Streptococcus Mutans In Lakota Sioux

An Oral Health Research Study

Working with Mothers and their Newborn Babies

If you are interested and want more information please call
605.867.5519
Specific Aims of the Study

- To determine the temporality and fidelity of transmission of SM from mother to child
- To characterize expression of virulence determinants of different genotypes of SM
- To determine the composition of total acid flora in mothers and children
- To determine the incidence and progression of ECC in American Indian children
- To identify behavioral, environmental, growth, and dietary risk factors in American Indian children
Recruitment

- Original goal was to have 250 mother/child dyads enrolled by February 2009.
- Due to a myriad number of issues, including the very difficult winters of 2009-2010, recruitment lasted much longer and was completed at the end of May 2010.
- We have 243 mother/child pairs enrolled in the study. The Power analyses done for the grant indicated that we would need 200 mother/child pairs at the end of the study.
Visit 1: Baseline
- Baby approximately one month old
- Mother and child sampled

Visit 2: 4 months
- Mother and child sampled
- Primary caregiver sampled

Visit 3: 8 months
- Mother and child sampled
- Primary caregiver sampled

Visit 4: 12 months
- Mother and child sampled
- Primary caregiver sampled

Visit 5: 16 months
- Mother and child sampled
- Primary caregiver sampled

Visit 6: 22 months
- Mother and child sampled

Visit 7: 29 months
- Mother and child sampled

Visit 8: 36 months
- Mother and child sampled
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Plaque samples from mothers and children, packaged and shipped to UI via Federal Express

Plaque samples processed via an extensive array of selective/differential plating

SM isolated and 10 colonies per subject processed for confirmation of ID and DNA isolation

Total acid flora determined

"Special" isolates of interest for further analyses

AP-PCR DNA fingerprinting for determination of SM genotypes

Analysis of SM genotypes via GelComparII
Percent of Screened Mothers where SM or LB were Recovered
Percent of Screened Children where SM or LB were Recovered
Preliminary data on bacterial levels

Visit 1 (Baseline)
Visit 2 (4 months)
Visit 3 (8 months)
Visit 4 (12 months)

cfu/swab sample

Mother SM
Child SM
Mother ASA
Child ASA
Mother LB
Child LB
Oglala Sioux Tribe Team

- Study Director and Senior Dental Hygienist
- Dental Hygienists (two part-time)
- Research Assistant
- Office Administrator
- Recruiter
University of Iowa Personnel

- Dr. David Drake, PI
- Bonny Olson, RA III
- Alissa Villhauer, RA I
- Dr. David Lynch, Post-Doctoral Fellow
- Anna Okulist, Pre-Dent student
- Morgan Olson, Pre-Dent student
- Additional Pre-Dent students on the way...
Co-Investigators

- Dr. Deborah Dawson, Head of the Biostatistical Unit
  - Graduate Research Assistant
- Dr. John Warren, Preventive & Community Dentistry
- Dr. Teresa Marshall, Preventive & Community Dentistry
Consultants

- External Consultants
  - Dr. Kathy Phipps
  - Dr. Dee Robertson
  - Dr. Betsy Foxman

- Internal Consultant
  - Dr. Jeffrey Banas