OST-SMILEs Study – Follow Up

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OST-SMILEs Study

- Observational study to investigate dental caries in AI infants/toddlers from a Northern Plains community
- Longitudinal study began in 2009 and followed a group children/mothers from age 1 month to 36 months of age
- Visits were at 1, 4, 8, 12, 16, 22, 28 and 36 months of age
- Collected mother/child demographic data and mother’s DMF at baseline; mother’s dietary information collected at 3 time points
- Collected data on child diet, oral bacterial characteristics and dmf at each visit
  - Note – caries data reported are only at the cavitated (d2+) level
OST-SMILESE Study

- Final sample size was 232
- By 16 months of age, 32% had dmf caries experience; by 36 months of age, 80% had dmf caries experience
- Logistic regression: Factors associated with having any caries included added higher sugar beverage consumption, younger maternal age, higher maternal caries levels and higher number of people in the household.
- Negative Binomial regression: Only maternal caries level (DMFS) was associated with child dmf (i.e., number of surfaces)
Follow-up Study

- In 2016, through the efforts of QUEST and Delta Dental organizations in South Dakota, Wisconsin and Iowa, we had the opportunity to conduct a one-time follow-up study of the same cohort of children when they were 6-7 years of age.
- We were able to hire the same coordinator/examiner (Delores Starr), a member of the tribal community.
- For this convenience sample, we attempted to track down all of the children in the original cohort.
- Human subjects approval obtained by Oglalla Sioux Research Review Board, University of Iowa IRB and Great Plains Area IRB
- Participants were offered $40 gift cards as incentive
- Using the same protocol as previously, data collection occurred between August 2016 and September 2017
Follow-up Study

- Specifically, we collected data on:
  - Caries in the remaining primary dentition and permanent first molars
  - Sealants on permanent first molars
  - Beverage consumption screening
  - Child height and weight
Results

- We were able to recruit 117 children from the original cohort (roughly half)
- 41% male, 59% females
- All children were 6 or 7 years old
- We also obtained dental records for each child and preliminary findings were:
  - Very few received treatment at the local Indian Health Service clinic
  - During the roughly 3-year period between the original and follow-up study, about two-thirds received extensive treatment at a large pediatric dentistry practice 100 miles away
Results – Primary Dentition

- Prevalence of caries – primary molars and canines:
  - By approximately the 7th birthday:
  - 93% had caries experience (dmf>0); 7% were caries free (dmf=0)
  - 55% had dmfs ≥ 30
  - 62% had dmft ≥ 8

- Primary molars and canines:
  - Mean (SD) dmfs = 29.2 (16.2)
  - Mean (SD) dmft = 7.1 (3.2)
  - Mean (SD) number of stainless steel crowns = 4.5 (3.2)
  - Of those with crowns, 82% had 4 or more
Results – Permanent First ("Six Year") Molars

- 39% caries prevalence (61% caries-free)
- Mean DMFS = 1.3
- Mean DMFT = 0.8
- Sealant prevalence (one or more surfaces) = 45%
- Mean number of sealant surfaces (fully or partially retained) = 1.1
Some Trends Over Time – Age 1 to Age 6-7

- Caries in the maxillary incisors - Age 1 to Age 3
- Caries in the primary molars – Age 1 to Age 6-7
- Random selection of 20 cases
Maxillary primary incisors – dmf surfaces
Observations

- Overall, some children (13%) had caries in the maxillary incisors at 12 months of age.
- Many more develop caries in these teeth by 16 or 22 months of age – in the full sample, about 28% and 43%, respectively had caries at these ages.
Observations

- Many children have caries in their primary molars at 36 months, but a relatively modest number of surfaces are involved.
- The number of surfaces involved jumps dramatically from 36 months to age 6 or 7 years – of all dmf surfaces:
  - At 36 months: 70% decayed, 30% filled, <1% missing
  - At 6-7 years: 11% decayed, 76% filled, 13% missing
- Mean number of crowned surfaces:
  - At 36 months – 4.5
  - At 6-7 years – 20.4
What Does it Mean?

- For Primary Prevention in primary incisors:
  - Must occur by 12 months or sooner (optimal)

- Secondary Prevention (intervention) – primary incisors:
  - 16-22 months

- For Primary Prevention in primary molars:
  - By 28 months

- For Secondary Prevention (intervention) – primary molars:
  - Around 36 months (can be earlier, but not much later)
What Can Be Done?

“We seek the grail”
What Can Be Done?

- Visits to the Operating Room (who pays???)
- Fluoride Applications (by the boatload??) (lack of data on effectiveness is troubling)
- Xylitol gum (seriously??)
- Chlorhexidine gel (really??)
- Motivational interviewing (what planet did you say you came from??)
- Dietary intervention – reduce SSBs (maybe, but many challenges)
- SDF/silver nitrate (you got a better idea??.........but we do need more information on how to best use it clinically)
Questions and Discussion