2007 Annual Session Research Abstracts

The American Academy of Pediatric Dentistry (AAPD) Foundation is dedicated to the advancement of research related to improving children's oral health and the specialty of pediatric dentistry. To fulfill part of this mission, the Foundation supports many research awards, grants, and fellowships. The following research abstracts have been chosen by the AAPD Council on Scientific Affairs subcommittee and will be presented during the 2007 AAPD Annual Session in San Antonio on May 26, 2007.

Note: These research abstracts have not been edited by the AAPD editorial staff. The abstracts are published as received from the authors, except for changes in style. Any errors in content are the responsibility of the contributors, not of Pediatric Dentistry, the journal of the American Academy of Pediatric Dentistry.

2006 OMNI Pediatric Dentistry Postdoctoral Research Fellowship Abstracts

Up to 3 pediatric dentistry students/residents are selected for the OMNI Pediatric Dentistry Postdoctoral Research Fellowship, based on proposal submissions. Recipients conduct a yearlong research fellow-ship and present their research at the AAPD Annual Session. The following research abstracts will be presented

Root Fractures in Children and Adolescents: Diagnostic Considerations. Molina JR*, Vann WF, McIntyre J, Trope M, Lee JY (The University of North Carolina at Chapel Hill, Chapel Hill, NC)

Research supported by the AAPD Foundation and OMNI Preventive Care through the OMNI Pediatric Dentistry Postdoctoral Research Fellowship and MCH Grant # 5 T17 MC 00015 14.

Purpose: To (1) characterize epidemiological trends in anterior permanent tooth trauma (2) examine the relationship of crown fractures and concomitant root fractures to determine if crown fractures are protective against root fractures (3) determine the diagnostic value of obtaining three periapical radiographic projections to assess potential root fractures.

Methods: This was an eight-year cross-sectional study of patients aged 6-18 involving maxillary central/lateral incisor trauma for which three clearly diagnostic periapical radiographs were taken at the initial emergency visit. Two trained and calibrated experienced dentists served as the expert examiners for the radiographic assessments. Kappa statistics, Pearson's Chi-Square tests and logistic regression analyses were employed.

Results: The final sample included 185 teeth in 114 children. Demographic and epidemiologic findings were comparable to previous studies. Expert examiners detected: 22 root fractures, 10% of the teeth exhibited root fractures when no crown fractures was documented, and 14% of the teeth had both crown fractures and root fractures as separate entities. Examiner reliability was Kappa =0.81.

Conclusions: Crown fractures were not protective against root fractures; indeed, teeth with crown fractures were twice as likely to have a root fracture. As radiographic projections increased, root fractures were identified more often; however, our data suggest there is no reason to suspect a complete root fracture in pre-teens unless the tooth exhibits clinical signs. Our data provide solid evidence to support obtaining multiple radiographic projections at different vertical angulations to rule out root fractures in children and adolescents when root fractures are suspected.

Prevention and Treatment of Oral Mucositis in Children: Preclinical Studies. Patel RV*, Crowe D, Good D, Udin R (University of Southern California, Los Angeles, CA)

Research supported by the AAPD Foundation and OMNI Preventive Care through the OMNI Pediatric Dentistry Postdoctoral Research Fellowship

Purpose: Cancer chemotherapy drugs have significant undesirable side effects on oral epithelium. In the pediatric hospital environment, mucositis is the most significant oral complication of chemotherapy. Modifying the mucosal response to chemotherapy drugs may reduce the onset, severity, and duration of oral mucositis. The purpose was to determine if a new growth factor combination GF-3 is effective in prevention and treatment of oral mucositis in a preclinical model.

Methods: We compared the effects of 6 micrograms GF-3 to equivalent doses of keratinocyte growth factor (KGF) prior to 3 daily 60 mg/kg doses of the chemotherapy drug 5-fluorouracil (5-FU) in the C57Bl6 mouse. All animals were weighed and examined daily for degree of mucositis, weight loss, and signs of acute toxicity. We performed white blood cell counts and histopathologic assessment of oral and intestinal mucosa. **Results:** GF-3 reduced the percent loss of body weight resulting from 5-FU treatment (12% control, 9% GF-3, 6% KGF; P<.003, t test). Mice treated with GF-3 regained weight faster than controls (9 days control, 6 days GF-3, 5 days KGF; P<.00009). GF-3 also reduced 5-FU induced atrophy of oral and intestinal mucosa similar to that observed with KGF treatment. GF-3 produced complete restoration of white blood cell counts (WBC) by 6 days after the final 5-FU dose. WBC counts in GF-3 treated group's averaged 9100/ml by day 9 compared to 2200/ml for control and 3600/ml for KGF treated groups (P<.005).

Conclusion: GF-3 treatment protected oral and intestinal mucosa and bone marrow cells from 5-FU anti-proliferative effects.

Virulence Factors related to Mutans Streptococci Transmission from Mothers to Children. Tan S*+, Featherstone JDB, Hoover C, Zhan L (University of California San Francisco, San Francisco, CA)

Research supported by the AAPD Foundation OMNI Pediatric Dentistry Postdoctoral Fellowship and the California Society of Pediatric Dentistry

Purpose: To investigate virulence factors associated with mutans streptococci (MS) transmission from caries active mothers to their children

Methods: Saliva samples were collected from 10 mothers with active caries and from their children aged 2-5 years. DMFS/dmfs scores of mothers/children were recorded. Ten MS colonies were isolated from each subject. Streptococcus mutans and Streptococcus sobrinus were identified by fermentation tests. Arbitrary primed polymerase chain reactions (AP-PCR) with primers OPA 05 and OPA 13 determined the MS genotypes and MS transmission. Biofilm formation and mutacin production abilities against S. gordonii, S. sanguinis and S. sobrinus were compared between transmitted (T) and non-transmitted (NT) MS strains.

Results: All mothers and children had active caries (DMFS/ dmfs 27 ± 14 and 10 ± 12 , respectively) and MS infection. The mean log10 MS colony-forming units/ml in saliva for mothers and children were 6.3 ± 1 and 4.1 ± 1.4 , respectively. AP-PCR identified a total of 36 MS strains in the mothers (7 transmitted and 29 non-transmitted). No statistically significant difference was found in biofilm formation between T and NT MS strains. There was a non-significant trend toward more mutacin formation by T MS strains against *S. gordonii* and *S. sanguis* (paired t-test, p>0.05). T strains produced significantly less mutacin against *S. sobrinus* (paired t-test, p<0.05) than NT strains.

Conclusions: The transmission rate from mother to child (40%) observed in this study is lower than previously report-

ed. Results suggest that mutacin formation may play a role in transmission of MS, but biofilm formation ability associated with transmission was not found.

⁺ Dr. Tan will present as both an OMNI Fellow and a GSRA Finalist.

AAPD Graduate Student Research Awards Competition Abstracts

The Graduate Student Research Awards (GSRA) competition is comprised of current and recent pediatric dentistry postdoctoral students/ residents. Following an application process, up to 8 finalists are chosen to present their research at the Annual Session. The recipient judged to have accomplished the most outstanding research (based on their manuscript and presentation) will receive the Ralph E. McDonald Award. The following are the 2006-07 GSRA recipient abstracts:

Odontogenesis and Tooth Maturation in Patients with Cleft Lip and Palate. Borodkin AF*, Feigal RJ, Moller KT, Beiraghi S, Hodges JS (University of Minnesota School of Dentistry, Minneapolis, MN)

Purpose: Studies suggest a delay in tooth development in patients with clefts. The purpose of this study was, (i) to quantify and compare dental development of cleft lip and palate (CLP) patients to age and gender-matched controls, (ii) to relate these findings to type and severity of the cleft, and (iii) to examine delays in individual teeth and their proximity to the cleft.

Methods: Standardized methods were used to stage dental development and dental age for 50 children with clefts and 50 matched controls by scoring panoramic radiographs. The data were analyzed with a mixed linear model, representing an advanced paired t-test.

Results: Data analyses indicate a correlation between delayed dental development and presence of a cleft with an overall delay of 0.52 years (P=.021). Boys showed a statistically significant delay, but girls did not. No differences in dental delay were found among subjects with unilateral vs. bilateral clefts. Data suggest an exaggerated delay for subjects with clefts of the primary and secondary palates versus clefts of the primary palate alone; however, this result did not reach statistical significance. The teeth most affected by the delay were those further from the cleft area: maxillary first and second premolars, and maxillary second molars.

Conclusions: 1) Patients with CLP exhibit a delay in tooth development of 6 months, 2) this delay is independent of type and severity of cleft, 3) boys exhibited a statistically significant delay while girls did not, and 4) the teeth most severely delayed were maxillary first and second premolars and maxillary second molars.

Sodium Hypochlorite-Zinc Oxide Eugenol Vital Pulpotomy in Primary Teeth. Calderon L*, Mitchell SC, Ruby J, Eleazer P, Rahemtulla F, Makhija S, Cox C (University of Alabama at Birmingham, Birmingham, AL; Phoenix Dental, Fenton, MI)

Purpose: Compare the clinical and radiographic success of vital pulpotomy treatment in primary molars using sodium hypochlorite (NaOCl) versus formocresol (FC).

Methods: Pulpotomies were performed in primary molars in healthy children ages 3-10 years old. Sixty-six primary teeth were randomized into 2 groups and evaluated for treatment outcomes: 34 vital pulps were treated with 3% NaOCl and 32 vital pulps were treated with 1:5 diluted Buckley's FC. Following treatment, the pulp chambers were filled with zinc oxide eugenol and restored with a stainless steel crown cemented with glass ionomer cement. Follow-up clinical and radiographic evaluations were done at 6 and 12 months postoperatively. Comparisons between the NaOCl and FC groups were made using chi-square (P<.05). Survival probability was determined using Kaplan-Meier method.

Results: Both the control (FC) and experimental (NaOCl) groups demonstrated 100% clinical success at 6 and 12 months. NaOCl group had 86% (19/22) radiographic success at 6 months and 88% (14/16) at 12 months. FC group had 84% (21/25) radiographic success at 6 months and 83% (10/12) at 12 months. No significant differences were found between the two groups. Survival probability: at 6 months (NaOCl = 0.81, FC = 0.75), at 12 months (NaOCl = 0.68, FC = 0.61)

Conclusions: NaOCl used as a medicament in vital pulpotomy treatment demonstrates clinical success comparable with FC and may prove to be a viable replacement for it.

Evaluation of the Root ZX Apex Locator in Primary Teeth. Ghaemmaghami S*, Eberle J, Duperon D (Department of Pediatric Dentistry, School of Dentistry, University of California, Los Angeles, CA)

Purpose: The purpose was to evaluate the accuracy of Root ZX in determining working length in primary teeth with or without root resorption.

Methods: The Root ZX was used to locate the apical foramen of 150 primary anterior incisors in vivo, and provide the canal length to the nearest 0.5mm. These teeth were in various stages of health, with different levels of resorption. After tooth extraction, a standard ruler was used to measure the length of the root to the nearest 0.5mm. A paired t-test was utilized to compare the working length obtained with the Root ZX and the measured length of the canal (alpha=.05).

Results: The difference between the canal length measured by the Root ZX and the measured length was less than 0.5mm

in 98 canals (65%), was short by 0.5mm or greater in 26 canals (17.3%), and was overextended by 0.5mm or greater in 26 canals (17.3%). However, the error in measurement with the Root ZX was greater than 0.5mm in only 7 of 150 teeth, indicating that the Root ZX was able to locate the foramen in 95% of the teeth with an accuracy of +/- 0.5mm. The mean difference of 0.013mm (+0.384mm) between the actual canal length and Root ZX measurements was not statistically significant (p=.671).

Conclusions: If an error of + 0.5mm is considered to be clinically acceptable, the use of electronic apex locators can accurately assess crown to apex length in primary anterior teeth with and without resorption.

The Effects of Nitrous Oxide in an Oral Transmucosal Fentanyl Citrate/Hydroxyzine Pamoate Regimen. Pilipowicz O*, Briskie D, Majewski R, Hu J, Reynolds, P (University of Michigan, Ann Arbor, MI)

Research supported by the Mott Children's Health Center, Flint, MI.

Purpose: The purpose was to determine the safety and efficacy of the addition of 50% Nitrous Oxide (N2O) to a sedation regimen of Oral Transmucosal Fentanyl Citrate (OTFC) and Hydroxyzine Pamoate (HP) in uncooperative pediatric dental patients.

Methods: This is a double-blind, randomized crossover clinical study. At each sedation appointment, patients received 10-15 _g/kg OTFC and 2 mg/kg HP, with 50% N2O/50% O2 received at one appointment and 100% O2 at the other in a random order. Behavior and physiological parameters were recorded by a trained rater.

Results: A total of 21 patients participated in the study with a mean age of 56.3 months (range of 44-68 months). During the first 30 minutes of operative behavior, patients showed significantly less crying (P=.01), movement (P=.005), and overall disruptive behavior (P=.01) during the N2O appointment. They also demonstrated an increased level of sedation (P=.025) and sleep (P=.027) for this same time period. Patients showed a slight increase in respiratory rate and end-tidal CO2 with N2O. There were no significant differences in oxygen saturation between the groups, however one patient in the N2O group did desaturate and required reversal with Naloxone.

Conclusions: The addition of 50% N2O to OTFC/HP resulted in an increased level of sedation and sleep, and significantly less crying, movement and overall disruptive behavior for the first 30 minutes of operative treatment. N2O has the potential to potentiate the effects of OTFC/HP in children and must be titrated to avoid deep sedation and the potential negative effects of hypoxemia.

Determinants of Dental Referrals Among WIC Nutritionists in North Carolina. Shick EA*, Lee JY, Rozier RG (Departments of Pediatric Dentistry and Health Policy, University of North Carolina, Chapel Hill, NC)

Supported by AAPD Foundation and OMNII Pharmaceuticals through the OMNII Postdoctoral Research Fellowship and MCH Grant # 2 T17 MC 0015-13

In North Carolina (NC) all WIC centers provide oral health education and screenings so NC-WIC is well-positioned to 1) identify children at high risk for dental caries and 2) make referrals to assist low income pre-school children gain access to dental care.

Purpose: The overarching objective of this investigation was to examine the determinants of dental referral practices among NC-WIC nutritionists.

Methods: A 118-item questionnaire was administered to all NC-WIC nutritionists (n=355). The instrument contained questions on 3 major domains: oral health knowledge (15 items), oral health confidence (16 items), and dental referral practices (2 items).

Results: Questionnaires were received from 324 nutritionists in 82 agencies, yielding a response rate of 92% and 96%, respectively. Nutritionists were the most confident in counseling about dental visits (90%), followed by confidence in oral health counseling (84%), encouraging parents to seek dental care for their child (76%), and performing caries risk assessments (46%). Most nutritionists (96%) made dental referrals for children 1-5 years. Logistic regression revealed that confidence in performing oral health risk assessments (0R=2.04; 95% CI=1.1, 3.9), in counseling parents about dental referrals (0R=3.39; 95% CI=1.1-10.0) and that parents would seek dental care when advised (0R=2.78; 95% CI 1.4, 5.5) were significantly associated with the likelihood of making dental referrals (P<.05).

Conclusions: Our findings offer key strategies for enhancing the oral health education of WIC nutritionists and underscore that when WIC nutritionists have more education and confidence they are much more likely to make dental referrals for high risk young children.

The Success of Fissure Sealants on Hypoplastic First Permanent Molars. Yang YJ*, Tootla R, Eklund SA, Briskie DM, Straffon LH, Nór JE (University of Michigan, Ann Arbor, MI; Mott Children's Health Center, Flint, MI)

Purpose: The purpose of this study was to evaluate fissure sealant retention and the efficacy of sealant in terms of caries prevention on newly erupted hypoplastic first permanent molars 6 months following placement. **Methods:** A total of 834 children with 2900 teeth were randomly assigned to either sealants or non sealant groups. Binary regression analysis and Chi-Square-test were used to analyze sealants efficacy on hypoplastic enamel in terms of caries prevention; Chi-Square and Spearman Ranked Correlation Tests were used to analyze the association between sealant retention and baseline enamel hypoplastic status in 6 months.

Results: Overall, fissure sealant retention rate of hypoplastic teeth (n = 599) was significantly lower from that of normal teeth (n= 668) at 6 months recall (P=.018). However, the effect of fissure sealant on preventing caries development for hypoplastic teeth was not different to that of normal teeth (P=.559). The placement of fissure sealants on hypoplastic teeth decreased the chance of caries development (P=.003). In 6 months, the caries prevention effect of sealant was associated with baseline brown (P=.005) but not with baseline white (P=.767) hypoplasia.

Conclusions: The retention of fissure sealants was lower in hypoplastic teeth. However, the finding that fissure sealants are effective in preventing caries in hypoplastic teeth suggests that this procedure is beneficial for patients with enamel defects.

Tobacco Control in Pediatric Dental Practices: A 2006 National Study. Yee C*, Ellison J, Miller A, Gansky S, Walsh M (University of California, San Francisco, School of Dentistry, San Francisco, CA)

Research supported by the CSPD foundation and by the NIDA/ NIDCR #1 Ro1 DEO1569-03

Purpose: Nicotine addiction has been documented as a pediatric disease. Adolescence is the primary time for tobacco use initiation and during which transition from experimentation to nicotine dependence occurs. The purpose of this study was to determine the tobacco-related knowledge, attitudes, and practice behaviors among U.S. pediatric dentists.

Methods: A 26-item survey was conducted among a national, random sample of 1,700 American Academy of Pediatric Dentistry members to assess tobacco-related knowledge, attitudes and behaviors. Frequency tables with odds ratios and 95% confidence intervals assessed factors related to tobacco control behaviors.

Results: Of 1,700 questionnaires, 1,343 (79%) were returned. From 1,246 (73%) usable questionnaires, 127 (10%) of the respondents had prior tobacco prevention/cessation training. Of those untrained, 509 (49%) were willing to be trained. One thousand fifty eight (85%) agreed it is important to ask adolescent patients about tobacco use, but 573 (46%) reported not knowing where to send patients for counseling as a significant barrier. Two hundred thirty one (19%) reported always/often asking their adolescent patients about tobacco use; 453 (36%) reported always/often advising known tobacco users to quit; and 335 (27%) reported always/often assisting with stopping tobacco use. Feeling well prepared to perform tobacco control behaviors was significantly associated with performance of tobacco control behaviors (OR= 3.6; 95% CI: 2.4-5.3).

Conclusions: This study showed that pediatric dentists are willing and interested in promoting tobacco cessation. Training programs on tobacco use and dependence treatment in the pediatric dental setting may be needed to promote tobacco control behaviors for adolescent patients.

AAPD Foundation Research Award Competition Abstracts

The Foundation Research Award (FRA) competition is comprised of clinicians, researchers, and academicians in pediatric dentistry. Following an application process, up to 4 recipients are chosen to present their research at the Annual Session. The recipient judged to have accomplished the most outstanding research (based on their manuscript and presentation) will receive an overall award. The following are the 2006-07 recipient abstracts:

Does Diabetes Mellitus Destroy Developing Enamel and Bone? Atar M*, Davis GR, Wong FSL (Queen Mary's School of Medicine and Dentistry, Barts and The Royal London Hospital, Department of Oral Growth and Development, Section of Pediatric Dentistry, London, United Kingdom)

Research supported by the Swiss National Foundation SNF, Switzerland, the Novartis Foundation, Switzerland, the Lichtenstein Foundation, Switzerland, the Independent Academic Society FAG, Switzerland, and the Hoffmann-La Roche Ltd., Switzerland

Purpose: The long-term complications of diabetes mellitus carry a considerable impact on the worldwide total annual medical costs. Diabetes affects all developing organs that require a strong blood supply. The purpose was to reveal the destructive effect of juvenile diabetes mellitus on developing dental hard tissues and bone investigating the 3-D structure and mineral composition of developing enamel and bone in teeth and skulls of genetically modified diabetic mice and rats.

Methods: Genetically modified B6.Cg-m+/+Leprdb mice and ZDF/Gmi-fa rats were scanned with x-ray microtomography (XMT). Three-dimensional images were reconstructed using computer generated false colour combination to highlight different levels of mineralization in bone and enamel as determined from the measured linear attenuation coefficients. Mineral analysis was performed using a twentyseven square-voxel probe.

Results: Diabetic mice and rats exhibited significantly more wear in their incisors and molars compared to control

animals.,Diabetic mice appeared to have regions of severe enamel hypomineralisation and diabetic rats had areas of marked enamel hypoplasia in mandibular incisors. Widespread deformities were observed in the alveolar process of the mandible and maxilla, and regions of extensive hypomineralisation were found in the calvarial bone of skulls.

Conclusions: Our observations suggest that juvenile diabetes mellitus exhibits an extensive detrimental influence on the function of ameloblasts and odontoblasts in laying down enamel and forming bone. These findings may explain recently reported clinical high caries levels in diabetic children suggesting that the level of impact is not only seen at environmental but also at the structural, histological and protein level.

Post-Operative Pain and Other Sequelae Associated with Dental Rehabilitations Harpavat S*, Wu S, Needleman H, Allred E, Berde C (Children's Hospital Boston and Harvard School of Dental Medicine, Boston, MA; University of Texas Health Science Center, Houston, TX)

Research supported by the Department of Dentistry, Childrens Hospital Boston

Purpose: To assess the prevalence of pain and other sequelae following dental rehabilitations and to determine variables which contribute to the severity and duration of pain and associated post-operative sequelae.

Methods: Ninety patients scheduled for dental rehabilitation under general anesthesia participated in the study. Patients were healthy, under age 12 and required treatment only on primary teeth. General anesthesia protocol was standardized and patients did not receive local anesthesia intra-operatively. Questionnaires were given to the parents, anesthesiologist, dentist and recovery nurse to record pain and post-operative sequelae using the Faces, Legs, Activity, Cry, and Consolability (FLACC) tool and the Wong-Baker FACES Pain Scale.

Results: Post-operative pain was recorded in 95% of children. Children who had extractions experienced more pain at home. Children who were either \geq 4 years old and had extractions or \geq 4 years old and had more than 12 procedures performed experienced increased post-operative pain. The most common post-operative sequelae were agitation, need for analgesics and sleepiness. Longer operative times resulted in increased post-operative sleepiness. Children who had traumatic intubations reported more sore throats. Children \geq 4 years old required more analgesics, had more post-operative sleepiness and had more nausea. All post-operative problems significantly decreased by day 2 and ceased by day 4-5.

Conclusion:

Children who were ≥4 old and had more than 12 proce-

dures were more likely to experience increased post-operative pain, required more pain medications and had more postoperative sleepiness and nausea

• Children who had extractions experienced the highest pain post-operatively

Development and Validation of a Family Dental Home Index. Lee JY, Rozier RG, and Zeldin LP (University of North Carolina at Chapel Hill, Chapel Hill, NC USA)

Research supported by Grant No. 11-P-91251/4-02 from CMS, HRSA and CDC.

Objective: The dental home (DH) is an important dimension of oral health but quantitative assessment of it has not been reported. Accordingly, we developed the Family Dental Home Index (FDHI) and tested its reliability and validity.

Methods: A 66 item self-completed questionnaire of Early Head Start parents' solicited knowledge, attitudes, and dental health practices. The 22-item FDHI included six domains of care: accessible (3-items), usual source (2-items), family-centered (6-items), comprehensive (2-items), compassionate (5-items), and culturally competent (3-items). Criterion-related predictive validity was assessed by testing for associations between overall FDHI scores (0-100) and five outcome measures (oral health status, trust in dentist, preventive care use, restorative care use, and dental care use for pain) using Spearman's correlation. Test-retest reliability was assessed using the intra-class correlation coefficient (ICC), calculated by two-way analysis of variance with data from respondents' reporting no dental visits during the three-week interval between initial and follow-up assessments.

Results: Questionnaires were completed by 795 families (65% = RR). The mean FDHI score was 52.3 SD±21.5. Families with higher FDHI scores were more likely to report better dental health status (r= .41), more trust in their dental provider (r=0.36), more use of preventive services (r=0.32), less use of restorative care (r=-0.11), and less use of dental services for pain (r=-0.25), all significant at P<.05. The test-retest survey was completed by 159 families, yielding an ICC of 0.82.

Conclusion: This new FDHI has good validity and reliability and provides a useful tool for quantifying the influences of the dental home on oral health.

Maternal Transmission of Mutans Streptococci in Severe Early Childhood Caries. Mitchell SC*, Ruby J, Moser S, Momeni S, Smith A, Li Y, Caufield P (The University of Alabama at Birmingham, Birmingham, AL and New York University, New York City, NY)

Purpose: This study tested the hypothesis that maternal transmission is the predominant mode of MS acquisition in children with severe early childhood caries (S-ECC).

Methods: Twenty-five mother/child pairs were selected from children with S-ECC preceding full mouth dental rehabilitation under general anesthesia at Children's Hospital, Birmingham, AL. Plaque samples were collected from the mother, child, and a carious lesion. Arbitrarily primed polymerase chain reaction (AP-PCR) genotyped 6-8 MS isolates from each plaque sample, and unique genotypes were identified. Representative MS strains of unique genotypes were selected and characterized by pulsed-field gel electrophoresis (PFGE). Cell suspensions were digested with a lysozyme/mutanolysin mixture, lysed in agarose plugs and chromosomal Smal digests were separated by PFGE. Digital images were imported into GelComp II software v. 4.05 (Applied Maths, Inc., Austin, TX); cluster analysis using the Pearson Productmovement Correlation and Unweighted Pair Group Method using Arithmetic Averages (UPGMA) were used to generate dendrograms from gel banding patterns. A Dice coefficient >90% indicated similarity or match among PFGE genotypes.

Results: In 28% (7/25) of mother/child pairs, all of the child's isolates matched the mother. In 16% (4/25), some of the child's genotypes matched the mother, and in 56% (14/25), no isolates matched the mother. Maternal transmission was a mode of MS acquisition in 44% (11/25) of mother/child pairs, while acquisition from non-maternal sources occurred in 72% (18/25).

Conclusions: In children with S-ECC, 72% acquired MS strains from non-maternal sources indicating that maternal transmission is not the predominate means of MS acquisition in children with S-ECC.

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