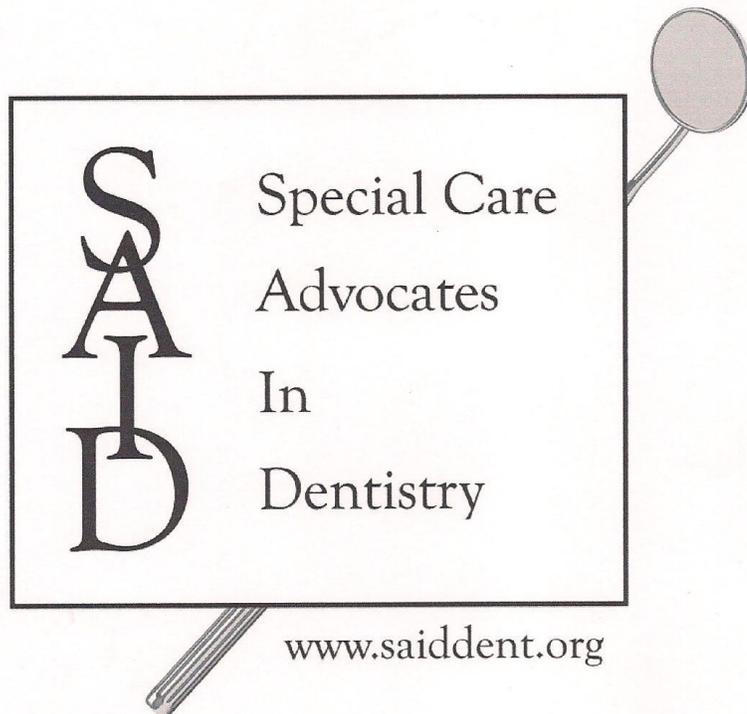


2013 ANNUAL SEMINAR PHILADELPHIA, PA

Special Care Advocates in Dentistry 2013 Lit. Review

(SAID's Search of Dental Literature
Published in Calendar Year 2012*)



Compiled by:
Dr. Robert G. Henry
Dr. Douglas Veazey

Special Acknowledgement to Ms. Sandy Challman who provided computer support, literature searches, and collecting and compiling the final articles which are seen here. Without her help and support this review would not have been possible.

**Recent journal articles related to oral health care
for people with mental and physical disabilities.**

Search Program = PubMed

Database = Medline

Journal Subset = Dental

Publication Timeframe = Calendar Year 2012*

Language = English

SAID Search-Term Results = 2,933

Initial Selection Result = 682 articles

Final Selection Result = 144 articles

SAID Search-Terms Employed:

- | | |
|------------------------------------|---------------------------------|
| 1. Intellectual disability | 21. Protective devices |
| 2. Mental retardation | 22. Moderate sedation |
| 3. Mental deficiency | 23. Conscious sedation |
| 4. Mental disorders | 24. Analgesia |
| 5. Mental health | 25. Anesthesia |
| 6. Mental illness | 26. Dental anxiety |
| 7. Dental care for disabled | 27. Nitrous oxide |
| 8. Dental care for chronically ill | 28. Gingival hyperplasia |
| 9. Self-mutilation | 29. Gingival hypertrophy |
| 10. Disabled | 30. Glossectomy |
| 11. Behavior management | 31. Sialorrhea |
| 12. Behavior modification | 32. Bruxism |
| 13. Behavior therapy | 33. Deglutition disorders |
| 14. Cognitive therapy | 34. Community dentistry |
| 15. Down syndrome | 35. State dentistry |
| 16. Cerebral palsy | 36. Gagging |
| 17. Epilepsy | 37. Substance abuse |
| 18. Enteral nutrition | 38. Syndromes |
| 19. Physical restraint | 39. Tooth brushing |
| 20. Immobilization | 40. Pharmaceutical preparations |

Program: EndNote X3 used to organize search and provide abstract. Copyright 2009 Thomson Reuters, Version X3 for Windows.

**NOTE: The American Dental Association is responsible for entering journal articles into the National Library of Medicine database; however, some articles are not entered in a timely manner. Some articles are entered years after they were published and some are never entered.*

1. **“Guideline on prescribing dental radiographs for infants, children, adolescents, and persons with special health care needs.”** *Pediatric Dent* 34(5): 189-91

2. **“Guideline on management of dental patients with special health care needs.”** *Pediatric Dent* 34(5): 160-165.

3. **S. K. Abdeshahi, M. A. Hashemipour, V. Mesgarzadeh, A. Shahidi Payam and A. Halaj Monfared. “Effect of hypnosis on induction of local anaesthesia, pain perception, control of hemorrhage and anxiety during extraction of third molars: a case-control study.”** *J Craniomaxillofac Surg* 41(4): 310-315.

INTRODUCTION: Systemic conditions are considered limiting factors for surgical procedures under local anaesthesia in the oral cavity. All the pharmacological methods to control pain in patients have some disadvantages, such as side effects and extra costs for rehabilitation. Therefore, in such cases alternative treatment modalities are considered, such as hypnosis in dentistry. The aim of the present study was to evaluate the effect of hypnosis on hemorrhage, pain and anxiety during the extraction of third molars. **MATERIALS AND METHODS:** In this case-control study, 24 female and male volunteers were included. The subjects had been referred to the Department of Oral and Maxillofacial Surgery, Kerman University of Medical Sciences, for extraction of third molars. Demographic data for all the subjects were recorded. Patients with chronic medical conditions were excluded. The patients were used as their own controls, with the third molars on one side being removed under hypnosis and on the opposite side under local anesthetic. Hypnosis was induced by one of the two methods, either fixing the gaze on one point or Chiasson's technique; both these methods are appropriate for patients in the dental chair. The Spielberger State-Trait Anxiety Inventory was used to determine patient anxiety levels before hypnosis and anaesthesia. Pain was scored using VAS (visual analogue scale). After surgery the patient was asked to bite on a sterile gauze pad over the surgical site for 30 min when hemorrhage from the area was evaluated. If there was no hemorrhage the patient was discharged. If hemorrhage persisted, the gauze pad was left in place for another 30 min and the area was re-evaluated. Any active oozing from the area after 30 min was considered hemorrhage. Hemorrhage, anxiety and pain were compared between the two groups. Data was analyzed using the t-test, McNemar's test and Wilcoxon's signed rank test using SPSS 18 statistical software. **RESULTS:** Twenty-four patients were evaluated; there were 14 males (58.3%) and 10 females (41.7%). The mean age of the subjects was 24.1 +/- 2.7 years (age range = 18-30 years). A total of 48 third molars were extracted. In each patient, one-third molar was extracted under hypnosis and the other under local anaesthesia. All the patients were in the ASA 1 category (normal) with no significant medical history. Of the subjects who underwent hypnosis, only two subjects (8.3%) reported pain after induction of hypnosis. In the local anesthetic group, 8 subjects (33.3%) reported pain. There was a significant difference between the two groups. The results of the study showed that patients in the hypnosis group had less pain during the first few hours post-operatively. Anxiety scores in the two groups were very close to each other and no statistically significant differences were observed in general and when each patient was compared with himself or herself. Pain intensity in the two groups at 5- and 12-h post-operatively exhibited significant differences. In the hypnosis group, 10 patients (41.7%) took analgesic medication; in the local anaesthesia group, 22 patients (91.7%) took the analgesic medication (P = 0.0001). In other words, patients reported less pain when they were under hypnosis. **CONCLUSION:** The results of the study showed that hypnosis can effectively reduce anxiety, hemorrhage and pain. More studies are necessary to collect data on the effect of hypnosis on oral and maxillofacial surgeries.

4. **M. D. Ahtari, E. A. Georgakopoulou and N. Afentoulide. “Dental care throughout pregnancy: what a dentist must know.”** *Oral Health Dent Manag* 11(4): 169-76

Pregnancy is a unique period in a woman's lifetime. Good oral health during pregnancy is important to the overall health of both the expectant mother and her baby. Oral health assessment should be part of comprehensive prenatal care for all women and every general medical practitioner and obstetrician should consider referral of a newly pregnant woman to a dentist as routine. Unfortunately, there may be times when pregnant women, obstetricians, and on occasion, dentists are skeptical of dental care during pregnancy owing to prejudices about the safety of dental treatment, resulting in delay of the dental treatment. The aim of this paper is to review the literature for evidence-based answers with regard to the frequent dilemmas of dentists concerning dental treatment of pregnant women. The search was performed using the PubMed database and systematic reviews and original articles (clinical and experimental studies) as well as guidelines produced by scientific organizations. From this review it can be concluded that most dental work is safe during pregnancy. Dentists and health agencies should provide and distribute information to women about the importance of maintaining oral health during pregnancy.

5. **D. J. Aframian, Y. T. Konttinen, M. Carrozzo and A. G. Tzioufas. “Urban legends series: Sjogren's syndrome.”** *Oral Dis* 19(1): 46-58

Sjogren's syndrome (SjS) is one of the most common autoimmune rheumatic diseases, clinically characterized by xerostomia and keratoconjunctivitis sicca. We investigated the following controversial topics: (i) Do we have reliable ways of assessing saliva production? (ii) How important are the quantity and quality of saliva? (iii) Are only anti-SSA/Ro and anti-SSB/La relevant for the diagnosis of SjS? (iv) Are the American-European Consensus criteria (AECC) the best way to diagnose SjS? Results from literature searches suggested the following: (i) Despite the fact that numerous tests are available to assess salivation rates,

direct comparisons among them are scarce with little evidence to suggest one best test. (ii) Recent developments highlight the importance of investigating the composition of saliva. However, more research is needed to standardize the methods of analysis and collection and refine the quality of the accumulating data. (iii) In addition to anti-Ro/La autoantibodies, anti-alpha-fodrin IgA and anti-MR3 autoantibodies seem to be promising diagnostic markers of SjS, but more studies are warranted to test their sensitivity and specificity. (iv) AECC are classifications, not diagnostic criteria. Moreover, recent innovations have not been incorporated into these criteria. Consequently, treatment directed to patients diagnosed using the AECC might exclude a significant proportion of patients with SjS.

6. A. Aggarwal and V. Keluskar. "Physiotherapy as an adjuvant therapy for treatment of TMJ disorders." *General Dent* 60(2): 119-122

Physiotherapy has long been used to cure joint and muscle diseases. It has also been used to treat various diseases without inflicting mental trauma or the pain of surgery. This adjunctive therapeutic modality is widely used for patients with orofacial disorders, especially in the prevention or treatment of temporomandibular joint (TMJ) disorder, hypomobility, or ankylosis. Physiotherapy has a particular importance in the treatment of TMJ disorders such as myofascial pain and internal derangement. This review article highlights the importance of physiotherapy as an emerging adjuvant therapy in the treatment of TMJ disorders.

7. Author: K. E. Ahmed. "The psychology of tooth wear." *Spec Care Dentist.* 33(1): 28-34

AIM: To review the main psychological and mental conditions that are manifested dentally in the form of tooth wear. These conditions include depression, eating disorders, and alcohol and drug use disorders. The paper will also review the comorbidity of these conditions and the relevance of other medical conditions and lifestyle factors, such as gastroesophageal reflux disorder, smoking and diet, in the expression of tooth wear. CONCLUSION: A holistic, multidisciplinary, healthcare approach is required in management of tooth wear patients with underlying mental health disorders. Dentists and Dental Care Professionals can have an important role in identifying these mental disorders through the observed tooth wear. They can also play a key role in monitoring patients' response and compliance to medical treatment through the monitoring of tooth wear progression and expression.

8. Alajbeg, D. P. Falcao, S. D. Tran, R. Martin-Granizo, G. I. Lafaurie, D. Matranga, S. Pejda, L. Vuletic, R. Mantilla, S. C. Leal, A. C. Bezerra, H. A. Menard, S. Kimoto, S. Pan, L. Maniegas, C. A. Krushinski, D. Melilli, G. Campisi, C. Paderni, G. R. Mendoza, J. F. Yepes, L. Lindh, M. Koray, G. Mumcu, S. Elad, I. Zeevi, B. C. Barrios, R. M. Lopez Sanchez, C. Lassauzay, O. Fromentin, B. Z. Beiski, F. P. Strietzel, Y. T. Konttinen, A. Wolff and S. L. Zunt. "Intraoral electro-stimulator for xerostomia relief: a long-term, multicenter, open-label, uncontrolled, clinical trial." *Oral Surg Oral Med Oral Pathol Oral Radiol* 113(6): 773-81

OBJECTIVE: A previous sham-controlled multinational study demonstrated the short-term efficacy and safety for xerostomia treatment of an intraoral device that delivers electro-stimulation to the lingual nerve. The objective of this study was to test the hypothesis that those beneficial effects would be sustained over an 11-month period. STUDY DESIGN: The device was tested on a mixed sample of 94 patients with xerostomia in an open-label, uncontrolled, prospective multicenter trial. Statutory outcome assessments were done at 5th, 8th, and 11th months and analyzed by multiple comparisons. RESULTS: Improvements achieved at month 5 from baseline were sustained throughout the follow-up period for the primary outcome, xerostomia severity, and the secondary outcomes resting whole salivary flow rate, xerostomia frequency, oral discomfort, and difficulties in speech, swallowing, and sleeping. No significant side effects were detected. CONCLUSIONS: The beneficial effects of a removable intraoral electro-stimulating device were sustained for an 11-month period.

9. C. Altun, G. Guven, O. M. Akgun and C. Acikel. "Dental injuries and attention-deficit/hyperactivity disorder in children." *Spec Care Dentist* 32(5): 184-9

The purpose of this study was to determine the relationship between attention-deficit/hyperactivity disorder (ADHD) and traumatic dental injuries in children. A total of 194 children aged 7-15 years participated in this study. Fifty-seven traumatic injuries to permanent teeth were observed in 33 children. Although a statistically significant difference was not found ($p = .848$), the rate of incidence was higher in the group with ADHD (17.5%) than in the control group (16.5%). The maxillary right central incisors accounted for nearly half of all injured teeth, while the maxillary central incisors represented the most frequently injured teeth. Enamel fracture was the most common type of dental injury observed. The incidence of enamel fracture was higher in the control group (66.7%) than in the subjects with ADHD (43.3%). There was a significant association between the occurrence of traumatic dental injury and the presence of an overjet greater than 3 mm ($p = .020$).

10. D. A. Apatzidou. "Modern approaches to non-surgical biofilm management." *Front Oral Biol* 15: 99-116

The subgingival dental plaque is a microbial biofilm consisting of highly variable bacterial microcolonies embedded within a self-produced matrix of extracellular polymeric substance. In contrast to microorganisms growing in a planktonic state, the inhabitants of a biofilm are effectively protected within this dense structure from host defense mechanisms and from therapeutic agents, including antimicrobials. The mechanical removal of the microbial biofilm and the establishment of meticulous plaque control measures comprise the key elements for the success of non-surgical periodontal treatment. Ultrasonic devices are effective in disrupting the biofilm, and carefully remove soft and hard deposits from a root surface with

minimal trauma to the tooth structure. Controversies and modern trends in non-surgical periodontal therapy - such as quadrant-wise treatment modalities versus full-mouth approaches, hand-versus power-driven instrumentation, and the time frame of non-surgical periodontal therapy - are discussed here in depth in order to provide an insight into modern approaches to non-surgical biofilm management. Clinical, microbiological and immunological findings following different treatment protocols, in addition to cost-effective benefits of these clinical modalities, are discussed.

- 11. M. Archer-Festa and S. Nilsen-Kupsch. “Antiviral agents and hepatitis C.” N Y State Dent J 78(4): 42-5**
 Hepatitis C is the leading cause of chronic hepatitis, cirrhosis, liver cancer and liver transplantation. In 70% to 80% of the people infected, the virus creates a chronic carrier state and the patient will be clinically asymptomatic or have mild symptoms. Two new direct-acting antiviral agents, boceprevir and telaprevir, both protease inhibitors, have been approved by the FDA for treatment of Hepatitis C genotype 1. The current hepatitis C post-exposure protocol is that no immediate post-exposure therapy is advised, but the dental healthcare worker should be tested periodically and offered antiviral therapy if a chronic carrier state exists.
- 12. C. Areias, B. Sampaio-Maia, L. Pereira Mde, A. Azevedo, P. Melo, C. Andrade and C. Scully. “Reduced salivary flow and colonization by mutans streptococci in children with Down syndrome.” Clinics (Sao Paulo) 67(9): 1007-11**
OBJECTIVES: Although individuals with Down syndrome have considerable oral disease, the prevalence of dental caries in this group is low. The present study aimed to compare known risk factors for dental caries development in children with Down syndrome and a matched population (siblings). In both populations, the number of acidogenic microorganisms, such as mutans streptococci, lactobacilli and Candida species, and the paraffin-stimulated pH, flow rate and IgA concentration in whole saliva were evaluated and compared. **METHOD:** Saliva was collected, and the caries index was evaluated in 45 sibling pairs aged between 6 and 18 years old. The salivary IgA concentration was determined by immuno-turbidimetry. Salivary mutans streptococci, lactobacilli and Candida species were quantified on mitis salivarius agar containing bacitracin and 20% sucrose, rogosa agar supplemented with glacial acetic acid and sabouraud agar supplemented with chloramphenicol, respectively. **RESULTS:** Down syndrome children had a higher caries-free rate ($p<0.05$) and lower salivary mutans streptococci counts ($p<0.03$) compared to their siblings. Similar numbers of lactobacilli and Candida species were found in both groups. Salivary flow rates were 36% lower in Down syndrome children compared to their siblings ($p<0.05$). The salivary pH did not differ between Down syndrome children and controls. The Down syndrome children had an IgA secretion rate 29% lower than that of their siblings, but this difference was not statistically significant. **CONCLUSIONS:** In conclusion, the lower number of mutans streptococci in the saliva may be one of the factors contributing to the lower caries rate observed in Down syndrome children, despite evidence of hypo-salivation.
- 13. L. Argueta-Figueroa, G. Arzate-Sosa and H. Mendieta-Zeron. “Anesthetic efficacy of articaine for inferior alveolar nerve blocks in patients with symptomatic versus asymptomatic irreversible pulpitis.” Gen Dent 60(1): 39-43**
 This study sought to determine the anesthetic efficacy of 4% articaine with 1:100,000 epinephrine in patients with symptomatic and asymptomatic irreversible pulpitis in mandibular posterior teeth and if individual patient factors, pulpal disease characteristics, and previous medication are correlated to local anesthetic success. A second objective was to determine the specificity and sensibility of a cold test for prediction of anesthetic success prior to endodontic treatment. Seventy patients diagnosed with irreversible pulpitis in mandibular posterior teeth received 1.6 mL of 4% articaine with 1:100,000 epinephrine for an inferior alveolar nerve block (IANB) using a metal guide. The anesthetic solution was injected with a computer-preprogrammed delivery system for local anesthesia. Endodontic access was begun 15 minutes after solution deposition; later, patients rated their discomfort using the visual analog scale (VAS). The success rate for the IA NB using articaine was 64.2% in patients with symptomatic irreversible pulpitis and 86.9% in patients with asymptomatic irreversible pulpitis. Cold test prior to root canal treatment had a specificity and sensibility of 12.5% and 87.1%, respectively. The anesthetic efficacy of articaine in irreversible pulpitis is moderately acceptable, and anesthetic success increases when the patient has been premedicated with NSAIDs. The cold test appears to be a favorable indicator for predicting anesthetic success.
- 14. A. A. Asadi-Pooya, A. Nikseresht, E. Yaghoubi and M. Nei. “Physical injuries in patients with epilepsy and their associated risk factors.” Seizure 21(3): 165-8**
OBJECTIVES: To determine the frequency, nature, and risk factors associated with physical injuries in patients with epilepsy. **METHODS:** In this retrospective cohort study, patients 18 years of age and older with active epilepsy for at least 1 year were included. A questionnaire (including age, gender, education, type of epilepsy, seizure frequency, having aura, drug compliance, poly-pharmacy, comorbidity, type and place of injury) was completed from patients and healthy individuals. Statistical analyses were performed using multiple logistic regression and Chi-square tests. **RESULTS:** 264 patients with epilepsy and 289 healthy participants were studied. Among patients, 8.7% reported severe injuries and 44.3% had mild injuries. Most patients reported soft tissue injuries, followed by dental injury, burn, and head injury. Severe injuries were 2.9 times more frequent among patients having generalized tonic-clonic seizures (GTCS) compared to healthy control; this was not statistically significant ($P=0.07$). No patient reported having severe injuries due to SPS, myoclonic or absence seizures. Mild injuries were 10.3 times more frequent among those with GTCS compared to healthy control ($P=0.001$). The relative risk for having injury in patients compared to control group was 3.42 (95% confidence interval: 2.50-4.69). Injury was significantly related to having GTCSs,

illiteracy, having fall with seizures, comorbidity and having uncontrolled seizures. CONCLUSION: Physical injuries are common in patients with epilepsy; however most of these injuries are mild. Severe injuries rarely occur in patients with seizures other than GTCS.

15. **A. Azarpazhoo and H. C. Tenenbaum. "Separating fact from fiction: use of high-level evidence from research syntheses to identify diseases and disorders associated with periodontal disease." J Can Dent Assoc 78: c25**
Correlations with periodontitis have been reported for several diseases, although the biological mechanisms that might lead to these putative correlations are generally unclear. This paper describes the most robust of these associations, on the basis of an evaluation of research syntheses (meta-analyses and systematic reviews) available up to June 2011. This high-level evidence indicates that individuals with periodontitis have a significantly higher risk of various other problems, including cardiovascular disease, diabetes mellitus, respiratory disease and preterm low-birth-weight deliveries. For some conditions, treatment of periodontitis leads to a reduction in the rates of the other disease, lending further support to the concept that the association is reversible. An understanding of these correlations is important to allow dental health care providers to inform patients with periodontitis of their increased risks and to counsel such patients to seek additional medical assessment or intervention, as indicated.

16. **M. R. Azenha, G. Homs and I. R. Garcia, Jr. "Multiple brain abscess from dental origin: case report and literature review." Oral Maxillofac Surg 16(4): 393-7**
BACKGROUND: Brain abscess of dental origin is a rare situation and deserves attention due to its high mortality rate even when adequate treatment is done. Few reports are available when dental origin is the main cause of this infection. CASE REPORT: We present the case of a 70-year-old man diagnosed with cerebral abscess caused by apical lesions located at superior and inferior teeth. The three lesions containing pus were drained from anterior and posterior brain region and the laboratory evaluation revealed the presence of *Streptococcus viridians* and *Bacteroides*. Postoperative period was uneventful with excellent recovery after 1 year of surgery. Final diagnosis was able to be done due to excellent image exams availability like computer tomography and magnetic resonance using diffusion and perfusion techniques. DISCUSSION: The early detection of this pathology with the correct diagnosis essential to give the patient the best treatment including antimicrobial drugs and drainage is of extreme importance.

17. **S. M. Azevedo, K. Z. Kantorski, L. F. Valandro, M. A. Bottino and C. A. Pavanelli. "Effect of brushing with conventional versus whitening dentifrices on surface roughness and biofilm formation of dental ceramics." Gen Dent 60(3): e123-30**
The aim of this study was to evaluate the effect of conventional and whitening dentifrices on the weight loss, surface roughness, and early in situ biofilm formation on the surface of dental ceramics. Standardized feldspar ceramic specimens (Vita VM7 and Vita VM13) were submitted to the following experimental conditions: no brushing; brushing without a dentifrice; brushing with a conventional dentifrice; and brushing with a whitening dentifrice. A brushing machine was used to simulate brushing. The mass and surface roughness of all specimens from the test groups were evaluated prior to and after brushing. Ten participants used an oral device for eight hours to evaluate the biofilm formed in situ on the specimens. Scanning electron microscopy was used for qualitative and quantitative analysis of the biofilm. ANOVA and Tukey tests were used to analyze the results of weight loss, surface roughness, and presence of bacteria. A one-way Kruskal-Wallis test was used for bacterial colonization results. For both ceramics, brushing with a whitening dentifrice resulted in weight loss that was significantly greater when compared to brushing without a dentifrice or with a conventional dentifrice. Increased surface roughness was noticed on VM13 ceramic samples with both dentifrices, whereas only conventional dentifrice had a significant effect on the surface roughness of VM7 samples. For both VM7 and VM13, no difference was found between the experimental conditions with regard to the presence or number of bacteria. Cocci and short rods were the predominant microbial morphotypes. Granular or fibrillar acellular material partially covered the specimens. Brushing with a whitening dentifrice resulted in significant weight loss of ceramic restorations, while brushing with both conventional and whitening dentifrices can roughen ceramic surfaces. The increase in roughness was not clinically significant to contribute to increased biofilm formation.

18. **B. V. Bajkin, I. A. Bajkin and B. B. Petrovic. "The effects of combined oral anticoagulant-aspirin therapy in patients undergoing tooth extractions: a prospective study." J Am Dent Assoc 143(7): 771-776**
BACKGROUND: The authors conducted a study to evaluate the effect of combined oral anticoagulant-aspirin therapy on postoperative bleeding in patients undergoing tooth extractions. METHODS: A total of 213 patients were divided into three groups of 71 participants each. Patients in group A received combined anticoagulant-aspirin (100-milligram prophylactic dose) therapy. Patients in group B received oral anticoagulant therapy. Patients in group C received aspirin therapy (100-mg prophylactic dose). Bleeding was marked as an "event" if it met the following criteria: the bleeding continued beyond 12 hours, patient had to call the surgeon or return to dental practice or emergency department, bleeding resolved with large hematoma or ecchymosis within the oral soft tissues, or required a blood transfusion. RESULTS: Mean international normalized ratio (INR) (standard deviation) was 2.43 (0.61) in group A, and 2.45 (0.60) in group B. Postoperative bleeding occurred in three (4.2 percent) participants in group A, two (2.8 percent) participants in group B and no (0.0 percent) participants in group C. The authors found no statistical significance in postoperative bleeding between these three groups ($\chi^2(2) = 2.867, P = .238$). All cases of hemorrhage were controlled easily by using local hemostatic measures. CONCLUSION: Tooth extractions can be

performed safely while patients continue to receive combined anticoagulant-aspirin therapy. CLINICAL IMPLICATIONS: In patients receiving combined anticoagulant-aspirin therapy, simple tooth extractions can be performed safely without discontinuing either oral anticoagulant or antiplatelet therapy if their INRs are within therapeutic range and appropriate local hemostasis measures are provided.

19. **N. S. Bakry and S. M. Alaki. "Risk factors associated with caries experience in children and adolescents with intellectual disabilities." *J Clin Pediatr Dent* 36(3): 319-23**
 PURPOSE: The purpose of this study was to examine caries experience and associated risk factors in children and adolescents with intellectual disability (ID). METHODS: A total of 86 participants aged 3-13 years (33 with ID and 53 healthy) were included in the study. Participants received an oral examination and their caregivers completed a questionnaire. Caregivers were required to determine the "level of function" of their children with regards to performing self-care daily activities (brushing teeth, feeding and self-dressing, walking and performing toilet activities). Four levels of function were determined; (A) being completely independent, (D) completely dependent, (B) and (C) partially dependent on caregivers. RESULTS: In healthy participants the mean dft score was 8.83 +/- 4.99 whereas in those with ID the mean dft score was 6.81 +/- 6.11. The mean DFT score in healthy participants was 2.32 +/- 2.98 while the mean DFT in those with ID was 0.92 +/- 1.57. Both dft and DFT scores were significantly different between participants with ID and healthy ones ($p = 0.042$, $p = 0.044$ respectively). Caries status was not associated with gender, age or caregivers' education in the study sample. Significant associations were found between caries experience in participants with ID and their type of school ($p = 0.01$), nature of diet ($p = 0.001$) and "level of function" ($p = 0.007$). CONCLUSIONS: The type of school, nature of diet and "level of function" may be considered as influential risk factors associated with caries experience in children and adolescents with ID.

20. **M. I. Baluda, A. Vinnichenko Lu and N. A. Dmitrieva. "[Microbiological study of the efficiency of various hygienic products for toothbrushes]." *Stomatologiia (Mosk)* 91(1): 31-4**
 Options vary about the microbial contamination of toothbrushes as well as selection of adequate remedies for their disinfection. A microbiological study of contamination of toothbrushes was conducted considering the efficiency of purifying tablets, ultraviolet radiation and 0.05% solution of chlorhexidine as means of toothbrushes disinfection.

21. **A. Bascones-Martinez, M. Munoz-Corcuera and J. Bascones-Ilundai. "[Relationship between odontogenic infections and infective endocarditis]." *Med Clin (Barc)* 138(7): 312-7**
 Revised guidelines for the prevention of infective endocarditis published by national and international associations in the last years do not support the indiscriminate use of antibiotic prophylaxis for dental procedures. However, some of them still recommend its use in high-risk patients before dental treatments likely to cause bleeding. Given the high prevalence of bacteremia of dental origin due to tooth-brushing, mastication or other daily activities, it appears unlikely that infective endocarditis from oral microorganisms can be completely prevented. A good oral health status and satisfactory level of oral hygiene are sufficient to control the consequences of the systemic spread of oral microorganisms in healthy individuals. However, caution is still needed and prophylactic antibiotics must be administered to susceptible or medically compromised patients. This review briefly outlines the current concepts of odontogenic bacteremia and antibiotic prophylaxis for patients undergoing dental treatment.

22. **A. Battrell. "Looking at the past to see the future: the role of the dental hygienist in collaborating with dentists to expand and improve oral health care." *J Am Coll Dent* 79(1): 29-32**
 As dental hygiene approaches its 100th anniversary in 2013, it is clear that the profession has evolved far beyond the initial vision of Dr. Alfred Fones. Much of this evolution has been driven by changing oral health needs of the public as well as the way dentists practice, based on innovations in dentistry, to concentrate on more advanced procedures and delegate other duties to the dental hygienist. By and large, these changes have been achieved by dentists, dental hygienists, and other team members working together. We have an opportunity to overcome initial resistance and, based upon evidence of successful outcomes, further extend the reach of the dental team for the benefit of patients, especially the most vulnerable among them.

23. **D. E. Becker and K. L. Reed. "Local anesthetics: review of pharmacological considerations." *Anesth Prog* 59(2): 90-103**
 Local anesthetics have an impressive history of efficacy and safety in medical and dental practice. Their use is so routine, and adverse effects are so infrequent, that providers may understandably overlook many of their pharmacotherapeutic principles. The purpose of this continuing education article is to provide a review and update of essential pharmacology for the various local anesthetic formulations in current use. Technical considerations will be addressed in a subsequent article.

24. **K. Bekes and C. Hirsch. "What is known about the influence of dentine hypersensitivity on oral health-related quality of life?" *Clin Oral Investig* 17 Suppl 1: S45-51**
 OBJECTIVES: Oral health-related quality of life is a relatively new but rapidly growing concept in dentistry. It is an aspect of dental health addressing the patient's perception of whether his/her current oral health status has an impact upon his/her actual quality of life. Dentine hypersensitivity (DHS), which is a common condition of transient tooth pain associated with a variety of exogenous stimuli, may disturb the patient during eating, drinking, toothbrushing and sometimes even breathing. The

resulting restrictions on everyday activities can have an important effect on the patient's quality of life. The aims of this paper were to consider the concept of oral health-related quality of life and to review and discuss the literature on oral health-related quality of life and DHS. MATERIAL AND METHODS: A PubMed literature research was conducted using the terms ("dentin sensitivity" [MeSH Terms] OR ("dentin" [All Fields] AND "sensitivity" [All Fields]) OR "dentin sensitivity" [All Fields]) AND (("oral health" [MeSH Terms] OR ("oral" [All Fields] AND "health" [All Fields]) OR "oral health" [All Fields]) AND related [All Fields] AND ("quality of life" [MeSH Terms] OR ("quality" [All Fields] AND "life" [All Fields]) OR "quality of life" [All Fields])). Furthermore, a manual search was carried out. Any relevant work published presenting pertinent information about the described issue was considered for inclusion in the review. RESULTS: The combination of the search terms resulted in a list of only three titles. The few published studies convincingly demonstrated that oral health-related quality of life is negatively affected in patients suffering from DHS. CONCLUSIONS: Patients with sensitive teeth report substantial oral health-related quality of life (OHRQoL) impairment. Nevertheless, knowledge about the influence of DHS on oral health-related quality of life is incomplete and, therefore, needs further research. CLINICAL RELEVANCE: Oral diseases can lead to physical, psychological and social disability. This paper shows that DHS can have a negative impact on the patients' OHRQoL.

25. **M. H. Bennett, J. Feldmeier, N. Hampson, R. Smee and C. Milross. "Hyperbaric oxygen therapy for late radiation tissue injury." *Cochrane Database Syst Rev* 5: CD005005**
 BACKGROUND: Cancer is a significant global health problem. Radiotherapy is a treatment for many cancers and about 50% of patients having radiotherapy will be long-term survivors. Some will experience late radiation tissue injury (LRTI) developing months or years later. Hyperbaric oxygen therapy (HBOT) has been suggested as a treatment for LRTI based upon the ability to improve the blood supply to these tissues. It is postulated that HBOT may result in both healing of tissues and the prevention of problems following surgery. OBJECTIVES: To assess the benefits and harms of HBOT for treating or preventing LRTI. SEARCH METHODS: In March 2011 we updated the searches of the Cochrane Central Register of Controlled Trials (CENTRAL), (The Cochrane Library, Issue 1), MEDLINE, EMBASE, DORCTIHM and reference lists of articles. SELECTION CRITERIA: Randomized controlled trials (RCTs) comparing the effect of HBOT versus no HBOT on LRTI prevention or healing. DATA COLLECTION AND ANALYSIS: Three review authors independently evaluated the quality of the relevant trials using the guidelines of the Cochrane Handbook for Systematic Reviews of Interventions and extracted the data from the included trials. MAIN RESULTS: Eleven trials contributed to this review (669 participants). For pooled analyses, investigation of heterogeneity suggested important variability between trials but there was some evidence that HBOT is more likely to achieve mucosal coverage with osteoradionecrosis (ORN) (risk ratio (RR) 1.3; 95% confidence interval (CI) 1.1 to 1.6, P = 0.003, number needed to treat for an additional beneficial outcome (NNTB) 5). From single studies there was a significantly increased chance of improvement or cure following HBOT for radiation proctitis (RR 1.72; 95% CI 1.0 to 2.9, P = 0.04, NNTB 5), and following both surgical flaps (RR 8.7; 95% CI 2.7 to 27.5, P = 0.0002, NNTB = 4) and hemi-mandibulectomy (RR 1.4; 95% CI 1.1 to 1.8, P = 0.001, NNTB 5). There was also a significantly improved probability of healing irradiated tooth sockets following dental extraction (RR 1.4; 95% CI 1.1 to 1.7, P = 0.009, NNTB 4). There was no evidence of benefit in clinical outcomes with established radiation injury to neural tissue, and no data reported on the use of HBOT to treat other manifestations of LRTI. These trials did not report adverse effects. AUTHORS' CONCLUSIONS: These small trials suggest that for people with LRTI affecting tissues of the head, neck, anus and rectum, HBOT is associated with improved outcome. HBOT also appears to reduce the chance of ORN following tooth extraction in an irradiated field. There was no such evidence of any important clinical effect on neurological tissues. The application of HBOT to selected patients and tissues may be justified. Further research is required to establish the optimum patient selection and timing of any therapy. An economic evaluation should be undertaken.
26. **T. Bittner, N. Lorbeer, T. Reuther, H. Bohm, A. C. Kubler and U. D. Muller-Richter. "Hemi-mandibulectomy after bisphosphonate treatment for complex regional pain syndrome: a case report and review on the prevention and treatment of bisphosphonate-related osteonecrosis of the jaw." *Oral Surg Oral Med Oral Pathol Oral Radiol* 113(1): 41-7**
 BACKGROUND: The increase in reported cases of osteonecrosis of the jaw has increased the clinical significance of bisphosphonate therapeutic agents in the dentistry field. METHODS: We present a rare and severe case of bisphosphonate-related osteonecrosis of the jaw caused by medicamentous treatment of complex regional pain syndrome. This article reviews the current international prevention and treatment guidelines with regard to bisphosphonate treatment. RESULTS: Even rare indications for bisphosphonate treatment may lead to devastating effects on the patient. CONCLUSIONS: Dentists and physicians who prescribe bisphosphonates should be familiar with the side effects of these drugs and the management of these side effects. To prevent negative outcomes, it is important that there be a close collaboration among the doctors involved and that a thorough medical history is obtained; this is especially true because the range of indications for bisphosphonate treatment increases every year.
27. **J. E. Botero, F. L. Yepes, N. Roldan, C. A. Castrillon, J. P. Hincapie, S. P. Ochoa, C. A. Ospina, M. A. Becerra, A. Jaramillo, S. J. Gutierrez and A. Contreras. "Tooth and periodontal clinical attachment loss are associated with hyperglycemia in patients with diabetes." *J Periodontol* 83(10): 1245-50**
 BACKGROUND: Periodontal disease has been associated with diabetes, but there is still controversy on the relationship between periodontal clinical parameters and glycemic control. The purpose of this study is to assess the relationship between blood glucose levels and clinical parameters of periodontal disease in individuals with diabetes. METHODS: A total of 65

individuals with diabetes and 81 individuals without diabetes were included in the study. A full-mouth periodontal examination and pre-prandial fasting glycemic values were recorded for each individual. Glycosylated hemoglobin was only measured in patients with diabetes. A comparative analysis between groups (Mann-Whitney U test) and a correlation analysis between glycemic and periodontal parameters were performed (Spearman test). RESULTS: Patients without diabetes presented more teeth than individuals with diabetes ($P < 0.05$). Patients with diabetes with periodontitis displayed loss of periodontal clinical attachment compared to patients without diabetes, but the highest value was observed in patients with periodontitis that reported a smoking habit. Furthermore, patients with diabetes with periodontitis presented higher glycemic and glycated hemoglobin values in contrast to patients with gingivitis. Patients with diabetes with hyperglycemia had a higher risk to develop periodontitis (odds ratio = 2.24; 95% confidence interval = 1.02 to 4.93). A positive correlation was observed between glycemia and clinical attachment loss (AL), whereas a negative correlation between glycemia and the number of teeth present was found ($P < 0.05$). CONCLUSIONS: Tooth and periodontal AL were increased by hyperglycemia in individuals with diabetes. This study contributes additional evidence that diabetes could aggravate periodontal disease and affect the systemic health of individuals.

28. M. L. Brown and C. J. Drinkwater. "Hematogenous infection of total hip arthroplasty with Actinomyces following a noninvasive dental procedure." Orthopedics 35(7): e1086-9

This article describes a case of an infected total hip arthroplasty following a dental procedure. A 59-year-old man underwent total hip arthroplasty for osteoarthritis and had a routine recovery. Approximately 9 months postoperatively, he underwent a dental cleaning without antibiotic prophylaxis. One month later, he reported gradually worsening right hip pain and a purulent discharge. After several unsuccessful interventions, the patient was referred to the authors' facility. The patient's history, draining sinus tract, and radiographic changes were considered diagnostic of a late chronic infection, and the patient underwent 2-stage revision. Intra-operatively, the sinus tract extended directly to the acetabular component. Actinomyces spp were isolated from 3 of 7 intraoperative anaerobic cultures, and the patient received penicillin G for 8 weeks. Two weeks after discontinuing antibiotics, with no clinical manifestation of recurrent infection and a negative hip aspiration, a new hip prosthesis was implanted. The patient was prescribed penicillin for 12 months postoperatively. Harris Hip Score was 100 at 52-month follow-up. The American Dental Association and the American Academy of Orthopaedic Surgeons issued consensus guidelines for chemoprophylaxis in orthopedic patients undergoing dental procedures in 1997 and 2003. Although the American Academy of Orthopaedic Surgeons issued a revised guideline in 2009 recommending more robust antibiotic prophylaxis, significant controversy exists because at least one professional organization representing dentists has repudiated the 2009 American Academy of Orthopaedic Surgeons guideline. The authors describe the implications from their experience and similar cases in the literature with regard to such guidelines.

29. W. D. Browning and J. P. McCarthy. "A case series: herpes simplex virus as an occupational hazard." J Esthet Restor Dent 24(1): 61-6

STATEMENT OF THE PROBLEM: Herpes labialis infections are common and present a serious risk to the dental team. Purpose of the Study: The purpose is to make dentists aware of the risks involved with treatment of patients with active herpes labialis. In addition, evidence-based risk-management strategies are presented. METHODS AND MATERIALS: The incidence and natural history of herpes simplex virus type 1 (HSV-1) are reviewed. Four previously unreported case histories are presented to illustrate the impact common sequelae of HSV-1 can have on the dental team. The differences between HSV-1 and the blood-borne diseases which are the focus of universal precautions are discussed. In particular, the highly contagious, highly transmissible nature of HSV-1 and its transmission through aerosols are highlighted. Finally, the need to include protection against aerosols in the profession's understanding of universal precautions is noted. RESULTS: The authors suggest limiting the treatment of patients with active lesions to urgent care only, and treating active HSV-1 lesions to reduce time of healing. For four common clinical situations involving HSV-1 infections, evidence-based methods for protecting the dental team and the patient from cross-contamination are also presented. CONCLUSION: While it is clear that the treatment of patients with active herpes labialis lesions increases risk of cross-infection, there are good protocols for controlling this risk. CLINICAL SIGNIFICANCE: By bringing common vectors of cross-infection to light and providing evidence-based protocols for preventing them, this article provides practitioners with positive steps that can be taken for controlling the risk of spreading herpes infections to the dental team.

30. K. J. Buchholtz and R. S. King. "Policy and proposals that will help improve access to oral care services for individuals with special health care needs." N C Med J 73(2): 124-7

Historically, access to oral care for individuals with disabilities has been a challenge. This commentary provides an overview of this issue and discusses a recent policy and several proposals that will help improve outcomes and access to oral care for individuals who require special care dentistry services.

31. M. C. Carra, N. Huynh and G. Lavigne. "Sleep bruxism: a comprehensive overview for the dental clinician interested in sleep medicine." Dent Clin North Am 56(2): 387-413

Sleep bruxism (SB) is a common sleep-related motor disorder characterized by tooth grinding and clenching. SB diagnosis is made on history of tooth grinding and confirmed by polysomnographic recording of electromyographic (EMG) episodes in the masseter and temporalis muscles. The typical EMG activity pattern in patients with SB is known as rhythmic masticatory muscle

activity (RMMA). The authors observed that most RMMA episodes occur in association with sleep arousal and are preceded by physiologic activation of the central nervous and sympathetic cardiac systems. This article provides a comprehensive review of the cause, pathophysiology, assessment, and management of SB.

32. N. Chaumartin, M. Monville and B. Lachaux. “ [Dysphagia or dysphagias during neuroleptic medication?].” *Encephale* 38(4): 351-5

INTRODUCTION: Dysphagia is a common symptom in the general population, and even more among psychiatric patients, but rarely seen as a sign of seriousness. It is a cause of death by suffocation, and more or less serious complications, and therefore should be diagnosed and treated. Among psychiatric patients, organic and iatrogenic etiologies, as well as risk factors are identified, which worsen this symptom when associated. It is now accepted that neuroleptics can aggravate or cause dysphagia. They act by several pathophysiological ways on the different components of swallowing, which can be identified by dynamic tests in the upper aero-digestive tract endoscopy. **LITERATURE FINDINGS:** This symptom is rarely reported by patients and often underestimated by caregivers. The frequency of swallowing disorders is not known. Dysphagia is a cause of complications and an increase in mortality rates among psychiatric patients. It has also been found that the average number of psychotropic drugs in patients who die by cafe coronary is significantly higher than in other patients. There are several phases in swallowing: oral, pharyngeal, and esophageal. Swallowing disorders can affect each of these phases, or several at once: (a) Extrapyramidal syndrome: dysphagia is present in drug induced Parkinson's syndromes, but prevalence is not known. It is most often associated with another symptom of the extrapyramidal syndrome, but can also be isolated, making its diagnosis more difficult. Dysphagia is due to a slowing down in the oral and pharyngeal reflex, called bradykinesia; (b) Tardive dyskinesia: the oro-pharyngo-esophageal dyskinesia is the most common type. Esophageal dyskinesia causes asynchronous and random movements of the esophagus, resulting in dysphagia. It appears mostly beyond 3 months of treatment with neuroleptics; (c) Acute laryngeal or esophageal dystonia, associated or not with orofacial dystonia, is characterized by an impairment in the esophageal muscle contraction and a hypertonia of the upper sphincter of the esophagus; (d) Polyphagia or "binge eating", is frequent in psychotic patients; (e) Finally, there are risk factors for dysphagia: xerostomia, poor dental status, advanced age, neurological diseases, poly-pharmacy, sedative drugs, CNS depression, etc., which worsen the symptom. **CASE REPORT:** Mr. J., aged 28, with no psychiatric history, is admitted to the Unit for Difficult Patients in Villejuif for behavioral disorder with homicide on the street. The patient was restrained by passers-by and suffers a head injury and a fracture of the transverse process of L1 vertebra. A cranial CT scan is performed in the emergency room, it is normal. The patient is not known to psychiatric services, and has never taken neuroleptics. Mr. J. is homeless, known in his neighborhood for "his noisy delirium on the street and repeated alcohol abuse." After being arrested by the police in this context, a first psychiatric examination is conducted. The medical certificate states that his condition is not compatible with custody. Mr. J. remains mute; he has stereotyped gestures and strange attitudes. No delusion is verbalized. He receives vials of loxapine 50mg causing sedation. At his arrival in the department, Mr. J. has the same clinical picture, with a rigid and inexpressive face, reluctance, major nonconformity, poor speech. The search for drugs in urine is positive for cannabis. The diagnosis of schizophrenia is rapidly raised, motivating further prescription of loxapine 300 mg daily in combination with clonazepam 6 mg daily. From the earliest days, dysphagia to solids with choking and regurgitation is noted, aggravated by the increase of loxapine treatment of 450 mg / day to 700 mg / day, 7 days after admission. A physical examination is performed before the worsening of dysphagia, it is normal, and in particular, reveals no extrapyramidal syndrome. An anti-cholinergic corrector is introduced, without clinical improvement. A new physical examination is performed; it is normal except for sedation and a slight deviation of the uvula. Upper gastrointestinal endoscopy shows no anatomical lesion. No functional assessment of swallowing is done however. At this stage, the suspicion of neuroleptic induced dysphagia appears to be the most likely hypothesis. Treatment with loxapine is then stopped, resulting in a very rapid clinical improvement. Aripiprazole 15 mg / d is introduced. Dysphagia does not reoccur. **DISCUSSION:** Loxapine is an atypical antipsychotic, with a lower risk of neurological side effects than first generation of antipsychotics. These side effects are however numerous and from diverse pathophysiological mechanisms. Loxapine is an antagonist of dopamine and serotonin which is involved in the regulation of several neurotransmitters, explaining the multiple mechanisms involved in the onset of dysphagia: first, blocking dopamine D2 receptors in the striatum, causing motor side-effects of central origin, in addition to peripheral effects of the molecule, which impairs swallowing. In principle, the antagonist activity on serotonin 5-HT_{2A} receptors increases dopaminergic activity in the striatum, reducing the risk of extrapyramidal symptoms and tardive dyskinesia, without avoiding them completely. In addition to these mechanisms, cholinergic blockade reduces esophageal mobility and pharyngeal reflex. Moreover, the antihistamine, anti-cholinergic and adrenergic receptor blocking alpha-1 can cause sedation, which aggravates the symptom. Finally, the depression of the bulbar centres reduces the swallowing reflex and gag reflex altering the intake of food. **CONCLUSIONS:** The swallowing disorder caused by neuroleptics may occur regardless of the molecule or drug class to which it belongs. It can be found even in the absence of any other neurological signs. It is important to search for the etiological diagnosis for treatment. At the crossroads of several specialties, swallowing disorders are difficult to diagnose and treat. They are frequently underestimated, partly because patients rarely complain. In our case report, the diagnosis was ascertained by the removal of the medication, without functional evidence, probably by a lack of collaboration between the physician and the endoscopist who had not performed any dynamic investigation of swallowing. This case illustrates the importance of knowing the different mechanisms underlying dysphagia in psychiatric patients, and good communication with gastroenterologists to establish a precise diagnosis of the disorder, and adapt the therapy.

- 33. J. E. Cillo, Jr. “Analysis of propofol and low-dose ketamine admixtures for adult outpatient dento-alveolar surgery: a prospective, randomized, positive-controlled clinical trial. J Oral Maxillofac Surg 70(3): 537-46**
PURPOSE: The purpose of this study was to evaluate the hemodynamic stability and efficacy of 3 different propofol-ketamine admixtures compared with a propofol-saline solution admixture for continuous-infusion intravenous general anesthesia in outpatient adult dento-alveolar surgery. **PATIENTS AND METHODS:** This was a prospective, randomized, positive-controlled clinical trial between a propofol-saline solution admixture and 3 propofol-ketamine admixtures comprising 4 groups: group A (control), propofol and saline solution; group B, 10:1 propofol-ketamine ratio; group C, 5:1 propofol-ketamine ratio; and group D, 3:1 propofol-ketamine ratio. The bispectral index (BIS) was used to monitor all patients for time to induction (BIS <70) to recovery time (BIS >90). The outcome variables-noninvasive systolic, diastolic, and mean blood pressures; pulse; and BIS-were recorded at baseline and every 5 minutes during surgery. One-way analysis of variance and chi(2) analysis were conducted on the groups to determine statistical significance, set at P < .05. Post hoc pair-wise comparisons with Bonferroni adjustments were conducted on statistically significant groups. **RESULTS:** A total of 64 adult patients (37 men and 27 women; mean age, 27.3 years) who had dento-alveolar surgery under intravenous general anesthesia in an outpatient oral and maxillofacial surgery clinic setting were enrolled in this study. There were statistically significant differences between mean values of groups only for mean systolic blood pressure and mean blood pressure in groups A and D (127 mm Hg vs. 146 mm Hg and 96 mm Hg vs. 109 mm Hg, respectively). There were statistically significant differences in percent change from baseline measurements only between groups A and D for systolic blood pressure (-6.9% vs. +1.3%), diastolic blood pressure (-5.4% vs. +0.7), and mean arterial pressure (-0.5% vs. +2.6%). All mean percent changes from baseline were within 20% of baseline. There were statistically significant differences between groups for number of boluses but not time to surgery start, movement on injection, or length of surgery. Statistically significant differences in recovery times were found between all groups except between groups A and C and groups C and D. There were no incidences of postoperative nausea or vomiting in the immediate postoperative period. **CONCLUSIONS:** Through maintenance of hemodynamic stability and faster recovery time, the group B admixture (10:1 propofol-ketamine ratio) provided the greatest benefit for continuous intravenous general anesthesia in adults undergoing dento-alveolar surgery in an outpatient clinic setting.
- 34. H. V. Cohen, S. Y. Quek, A. M. Abbas, R. Figueroa and M. Malavia. “Case report: Patient with acute dental pain has cardiac valve replacement–INR 3.8. What to do? What not to do?” J N J Dent Assoc 83(1): 18-20**
 Cardiovascular medicine treatments now include an increasing number of cardiac valve replacements; approximately 60,000 patients may undergo heart valve replacement per year. Dentists will be seeing an increasing number of patients who have undergone this surgical intervention. This paper will overview the types of valve replacements and suggested patient management in the dental setting. A case report of one such patient and the treatment provided is presented.
- 35. H. M. Constante, J. L. Bastos, K. G. Peres and M. A. Peres. “Socio-demographic and behavioral inequalities in the impact of dental pain among adults: a population-based study.” Community Dent Oral Epidemiol 40(6): 498-506**
OBJECTIVES: To assess socio-demographic and behavioral inequalities in the impact of dental pain on daily activities, as well as to estimate the prevalence and intensity of dental pain. **METHODS:** A population-based cross-sectional study was carried out in Florianopolis, Southern Brazil, with 1720 adults aged 20-59 years in 2009-2010. Interviews were performed at adults' households, which included socio-demographics and behavioral characteristics, such as smoking status and alcohol abuse, along with mental health, self-reported health, number of retained teeth, dental pain occurrence (including its intensity and its impact on daily life). The association between the impact of dental pain and the covariates was tested using multinomial logistic regression. **RESULTS:** The global prevalence of dental pain was 14.8% (95% CI, 12.9-16.7). Adjusted analysis showed that women, those who self-classified as dark-skinned Blacks, those with low family income, current smokers and those with common mental disorders reported a higher impact of dental pain than their counterparts. Among subjects reporting dental pain, 12.7% indicated the maximum intensity, whereas 6.0% had some daily activity disrupted by it, such as difficulties in chewing certain foods (38.0%), sleep disturbance (21.0%), difficulty to work (21.0%) and difficulty in performing household tasks (8.0%). Prevalence ratios of impact of dental pain between the poorest income group and richest income group (2.4), between the highest and lowest schooling group (2.6), and between dark-skinned Blacks and Whites (2.1) were of higher magnitude than the dental pain prevalence ratios among the same groups (1.7, 1.3 and 1.4, respectively). **CONCLUSIONS:** The impact of dental pain showed a social gradient. Inequalities between socio-economic groups found in this study should be taken into account, as the impact of dental pain leads to reduced daily activities and poor quality of life.
- 36. P. Y. Cousson, M. Bessadet, E. Nicolas, J. L. Veyrone, B. Lesourd and C. Lassauzay. “Nutritional status, dietary intake and oral quality of life in elderly complete denture wearers.” Gerontology 29(2): e685-92**
BACKGROUND AND OBJECTIVE: The prevalence of malnutrition increases with age because of many factors. Edentulousness leads to the avoidance of many types of foods. The aim of this study was to determine whether elderly complete denture wearers have a higher risk of malnutrition than dentate controls. **MATERIAL AND METHODS:** A Mini-Nutritional Assessment (MNA) and a 3-day dietary record were compiled for a group of fully dentate (21 women and 29 men; mean age 70.1 +/- 6.1) and for a group of complete denture wearers (31 women and 16 men; mean age 70.1 +/- 8.1). Socio-demographic data and scores on the General Oral Health Assessment Index (GOHAI) questionnaire were collected. **RESULTS:** Inter-group comparison

of MNA scores showed that more subjects in the edentulous group (21.3%) risked malnutrition than in the dentate group (0%). The variability of the MNA could be explained for 22% by dental status, 7% by loneliness and 4% by the GOHAI score (regression analysis). Both groups had insufficient energy intakes and deficits in vitamins and micronutrients; moreover, edentulous subjects had lower intakes than dentate subjects. CONCLUSION: The use of conventional dentures increases the risk of malnutrition in the elderly.

- 37. L. A. da Silva, H. H. Kaziyama, J. T. de Siqueira, M. J. Teixeira and S. R. de Siqueira. "High prevalence of orofacial complaints in patients with fibromyalgia: a case-control study." *Oral Surg Oral Med Oral Pathol Oral Radiol* 114(5) e29-34**
OBJECTIVE: The aim of this study was to investigate the orofacial complaints and characteristics of patients with fibromyalgia syndrome (FS) compared with controls. **STUDY DESIGN:** We evaluated 25 patients diagnosed with FS compared with 25 gender- and age-matched controls by using a detailed clinical protocol for orofacial pain diagnosis and dental examination. **RESULTS:** FS patients had a higher frequency of temporomandibular disorders (TMD), masticatory complaints, pain with mandibular movements, and pain upon palpation of the head and neck area. There were no significant differences related to the dental exam. **CONCLUSIONS:** Orofacial complaints including TMD may be present either as symptoms of FS or as a comorbidity associated with this condition. A comprehensive evaluation of patients with FS is necessary to identify the need for specific treatments for orofacial complaints. Future studies, especially those with longitudinal design, should clarify whether a cause-effect relationship exists between orofacial complaints and fibromyalgia.
- 38. S. A. Danesh-Sani, A. Rahimdoost, M. Soltani, M. Ghiyasi, N. Haghdooost and S. Sabzali-Zanjankhah. "Clinical assessment of orofacial manifestations in 500 patients with multiple sclerosis." *J Oral Maxillofac Surg* 71(2): 290-4**
PURPOSE: The aim of the present study was to determine the incidence of orofacial manifestations in patients with multiple sclerosis (MS) and to assess the factors associated with these symptoms. The dental implications of this disease are discussed. **PATIENTS AND METHODS:** The study included 500 patients 11 to 69 years old with MS. All patients underwent a standard neurologic examination. The main manifestations assessed by the investigators were trigeminal neuralgia, facial palsy, temporomandibular disorders, visual complications, dysphagia, and dysarthria. The authors collected demographic information and clinical variables, such as disease duration and family history, to assess the factors associated with orofacial symptoms in patients with MS. **RESULTS:** The frequency of orofacial manifestations in patients with MS was 88.6%. Visual disorders (80.4%) were observed most frequently in patients with MS, followed by temporomandibular disorders (58.2%), dysarthria (42.1%), dysphagia (26.6%), facial palsy (19%), and trigeminal neuralgia (7.9%). A significant correlation with orofacial manifestations was found in patients with a longer duration of disease (>7 yr) compared with patients with a shorter duration (<7 yr; $P < .005$). **CONCLUSIONS:** Among the different manifestations, visual complications, temporomandibular disorders, and dysarthria were commonly observed in patients with MS. Dental practitioners should be aware of the medications used by patients with MS to provide conservative treatments and avoid drug interactions.
- 39. A. M. de Queiroz, T. de Siqueira Melara, P. D. Fernandes Ferreira, M. P. Lucisano, A. De Rossi, P. Nelson-Filho and R. A. Bezerra Silva. "Dental findings and special care in patients with Angelman syndrome: a report of three cases." *Spec Care Dentist* 33(1): 40-5**
 Angelman syndrome (AS) is a neuro-genetic disorder, characterized by intellectual disability, movement or balance disorders, specific abnormal behaviors, and severe speech and language limitations. Due to its low incidence and the non-specificity of developmental problems in newborns and young children, AS is not easily identified by clinical pediatricians. The aim of this paper is to present three cases of AS, reporting the orofacial characteristics and requisite dental care in these patients. Interestingly, this investigation found that certain typical features of mouth breathing syndrome, such as long and narrow faces, open mouth, shortened upper lip, lowered mandible position, shadows under the eyes (infra-orbital cyanosis), muscular hypotonia, and enlarged and anteriorized tongue, were present in the three studied AS patients.
- 40. S. L. DeBowes, S. L. Tolle and A. M. Bruhn. "Parkinson's disease: considerations for dental hygienists." *Int J Dent Hyg* 11(1): 15-21**
 The prevalence of Parkinson's disease (PD) is expected to double over the next 20 years owing to the increase in life expectancy. This progressive disease has several implications relating to oral health, and many are manageable with proper awareness and knowledge about the disease. This article reviews the epidemiology, pathophysiology, and characteristics of PD, as well as the treatments and oral health considerations to enable dental hygienists to undertake an informed approach to patient management strategies and provide optimal care.
- 41. K. Dhingra. "Methodological issues in randomized trials assessing probiotics for periodontal treatment." *J Periodontal Res* 47(1): 15-26**
BACKGROUND AND OBJECTIVE: Probiotics traditionally used in medicine field are now being used in an attempt to control and treat periodontal disease. However, the trials used to analyze the effects of probiotics have been subject to methodological criticism. The aim of this review was to assess the methodological deficiencies in randomized controlled trials evaluating the efficacy and safety of oral administration of probiotics for the treatment of periodontal disease. **MATERIAL AND METHODS:** A manual and electronic literature search (of MEDLINE and The Cochrane Library) was made, to March 2011, for randomized

controlled trials presenting clinical, microbiological, immunological and patient-centered data for the efficacy of probiotics compared with a placebo/standard periodontal therapy for the treatment of periodontal disease. RESULTS: The literature search yielded only four randomized double-blind, placebo-controlled studies that evaluated the efficacy of probiotics (using *Lactobacillus reuteri* and *Lactobacillus salivarius* probiotic strains) in patients with gingivitis. The studies were too methodologically flawed (of mediocre quality) with a high risk of bias for any meaningful conclusions to be reached. These studies lacked adequate descriptions of appropriate randomization, allocation concealment, blinding, formulation and dosage of probiotic and placebo, extent and severity of periodontal disease in patient populations, patient-centered outcomes, results data and potential confounding factors. CONCLUSION: The existing randomized controlled trials have important methodological limitations; consequently, there is insufficient evidence to support the efficacy of probiotics in treating periodontal disease. More rigorous scientific research, in accordance with existing guidelines and research recommendations of the present review, is required to examine the safety and efficacy of probiotics before they are embraced in periodontal therapy.

- 42. M. Diniz-Freitas, J. L. Lopez-Cedrun, J. Fernandez-Sanroman, A. Garcia-Garcia, J. Fernandez-Feijoo and P. Diz-Dios. “Oral bisphosphonate-related osteonecrosis of the jaws: Clinical characteristics of a series of 20 cases in Spain.”** *Med Oral Patol Oral Cir Bucal* 17(5): e751-8
- OBJECTIVE: The objective of this study was to define the clinical characteristics of osteonecrosis of the jaws (ONJ) induced by oral bisphosphonates in a series of patients from a circumscribed area in northwest Spain. STUDY DESIGN: A retrospective multicenter study was undertaken in 3 hospitals in an area with a radius less than 100 km in the Autonomous Community of Galicia (Spain). The medical records were reviewed and an oral examination was performed of patients diagnosed with oral bisphosphonate-related ONJ in the previous 3 years. RESULTS: We detected 20 cases of ONJ (24 lesions) related to oral bisphosphonates (alendronate [16 patients] and ibandronate [4 patients]), which were mainly administered as treatment for osteoporosis (17 patients). The mean interval between initiation of treatment and confirmation of a diagnosis of ONJ was 66+/-43 months (range, 6-132 months); in 7 patients (35%) the interval was less than 36 months. The past history revealed hypertension in 13 cases (65%) and diabetes in 4 (20%); 7 patients (35%) were on corticosteroid treatment. Oral surgery had been previously performed in 13 patients (65%) and the remaining 7 patients (35%) had removable dental prostheses. The lesions most frequently affected the posterior mandible (62.5%). The majority of the lesions (75%) were classified as stage 2, although lesions were identified in all established clinical stages (including 2 stage 0 lesions). CONCLUSION: In conclusion, in the present series, ONJ induced by oral bisphosphonates typically develops in women around 70 years of age, taking alendronate that underwent oral surgery. Most lesions are located in the posterior mandible and are classified as stage 2 at diagnosis. Some patients presented no known risk factors, suggesting that there may be risk factors still to be identified. There are well-defined patterns of clinical presentation that can facilitate early diagnosis of ONJ.
- 43. L. Doonquah and A. D. Mitchell. “Oral surgery for patients on anticoagulant therapy: current thoughts on patient management.”** *Dent Clin North Am* 56(1): 25-41, vii
- Minor oral surgical procedures make up a significant part of the daily practice of dentistry. With the increased sophistication of medical technology and medications there is increased likelihood of performing surgery on patients who are being treated for conditions that require some type of anticoagulant therapy. These patients are at an increased risk for perioperative bleeding or thrombotic complications if anticoagulation is discontinued or the dosage is adjusted. Therefore, a fine balance needs to be obtained and adequate preparation of these patients is the key to establishing this balance. This article reviews suggested approaches to the management of such patients.
- 44. B. Droll, M. Drum, J. Nusstein, A. Reader and M. Beck. “Anesthetic efficacy of the inferior alveolar nerve block in red-haired women.”** *J Endod* 38(12): 1564-9
- INTRODUCTION: The exact reasons for failure of the inferior alveolar nerve (IAN) block are not completely known, but red hair could play a role. The genetic basis for red hair involves specific mutations, red hair color (RHC) alleles, in the melanocortin-1 receptor (MC1R) gene. The purpose of this prospective randomized study was to investigate a possible link between certain variant alleles of the MC1R gene or its phenotypic expression of red hair and the anesthetic efficacy of the IAN block in women. MATERIALS: One-hundred twenty-four adult female subjects (62 red haired and 62 dark haired) participated in this study. Dental anxiety was determined in each subject using the Corah Dental Anxiety Questionnaire. The subjects were given 2 cartridges of 2% lidocaine with 1:100,000 epinephrine via the IAN block. Pulpal anesthesia was measured in the posterior and anterior teeth in 4-minute cycles for 60 minutes using an electric pulp tester. The MC1R alleles were genotyped for each subject from cheek cells containing DNA collected using buccal swabs. RESULTS: Women with red hair and women with 2 RHC alleles reported significantly higher levels of dental anxiety compared with women with dark hair or women with 0 RHC alleles. No significant differences in anesthetic success were found between any of the groups for any of the teeth. CONCLUSIONS: Red hair and the MC1R gene were significantly linked to higher levels of dental anxiety but were unrelated to success rates of the IAN block in women with healthy pulps.
- 45. P. Durukan, O. Salt, S. Ozkan, B. Durukan and C. Kavalci. “Cervico-facial emphysema and pneumomediastinum after a high-speed air drill endodontic treatment procedure.”** *Am J Emerg Med* 30(9): 2095 e3-6

Cervico-facial subcutaneous emphysema is defined as the abnormal introduction of air in the subcutaneous tissues of the head and neck. It is mainly caused by trauma, head and neck surgery, general anesthesia, and coughing or habitual performance of Valsalva maneuver. The occurrence of subcutaneous emphysema after dental treatment is rare, and diffusion of gas into the mediastinum is much rarer, especially when the procedure is a nonsurgical treatment. The most common dental cause of pneumomediastinum is the introduction of air via the air turbine handpiece during surgical extraction of an impacted tooth. Only 6 cases of pneumomediastinum after endodontic treatment have been reported between 1960 and 2008. Pneumothorax is defined clinically as an "accumulation of air or gas between the parietal and visceral pleurae," and although it is often not a medical emergency, it can result in respiratory distress, tension pneumothorax, shock, circulatory collapse, and even death. Although there are many possible causes of dyspnea during a dental procedure, 1 rare complication is pneumothorax. Although specific closed turbine systems are available for oral surgical procedures, these drills may be used in exodontia to section teeth and facilitate tooth extraction. We report a case of cervical subcutaneous emphysema and pneumomediastinum occurring after an endodontic treatment of right first molar using an air-tribune drill. We present here in a case of massive pneumomediastinum and cervico-facial subcutaneous emphysema that occurred after opening the access cavity for endodontic treatment. We describe its etiologies and guidelines for its prevention during nonsurgical endodontic treatment.

- 46. Author: H. Dym and H. Israel. "Diagnosis and treatment of temporomandibular disorders." Dent Clin North Am 56(1): 149-61, ix**
Current concepts and recommended treatment for temporomandibular disorders (TMDs) and temporomandibular joint pain and dysfunction have evolved over time. This article attempts to distill the current information for this often confusing topic into relevant clinical issues that will allow the general dental practitioner to be better able to diagnose and interpret clinical findings, and institute a therapeutic regimen that will provide needed relief to patients suffering from TMD dysfunction. Current management methods, both surgical and nonsurgical, are reviewed and discussed.
- 47. A. Edahiro, H. Hirano, R. Yamada, Y. Chiba, Y. Watanabe, M. Tonogi and G. Y. Yamane. "Factors affecting independence in eating among elderly with Alzheimer's disease." Geriatr Gerontol Int 12(3): 481-90**
AIM: In elderly patients with dementia, disturbed eating behavior is understood to be a core symptom or a behavioral and psychological symptom of dementia (BPSD). The purpose of the present study was to investigate the factors affecting self-feeding in elderly patients with Alzheimer's disease (AD). METHODS: A total of 150 AD patients who were hospitalized in dementia wards, or were residents of institutions or group homes were enrolled. The patients underwent an eating behavior examination, cognitive assessment, neurological examination and vital function tests. The eating behavior examination consisted of observation of the patients at mealtime. Items assessing eating behavior included the number of feeding cycles, stopping of eating or agitation and dysfunction. RESULTS: Logistic regression analysis carried out to identify factors with a significant effect on decreased independence in eating were difficulty in beginning a meal (OR = 14.498, CI = 2.067-101.690), presence of dysphagia signs (OR = 5.214, CI = 1.031-26.377) and the severity of dementia (OR = 4.538, CI = 1.154-17.843). CONCLUSION: The present study is the first to generate objective data showing that difficulty in beginning a meal is a factor that hinders independence in eating in AD, in addition to the presence of dysphagia signs and the severity of dementia. Assisting AD patients in maintaining eating independence might be effectively achieved by eliminating environmental factors that interfere with beginning a meal, and by providing assistance that will promote beginning a meal. The present results show the necessity of developing effective methods for assisting elderly patients with AD.
- 48. A. Eltas, S. Kartalci, S. D. Eltas, S. Dundar and M. O. Uslu. "An assessment of periodontal health in patients with schizophrenia and taking antipsychotic medication." Int J Dent Hyg 11(2): 78-83**
BACKGROUND AND OBJECTIVE: Severe periodontal disease is prevalent among patients with schizophrenia and is caused by the side effect of their medication, poor dental hygiene and smoking. The objective of this study was to evaluate whether the rate of periodontal disease could be modulated by changing the salivary flow rate (SFR) because of the use of antipsychotic medications in patients with schizophrenia. METHODS: Group A (n=33) included patients who used medications that may cause xerostomia, or dry mouth and Group B (n=20) included patients who used medications that may cause sialorrhea, an excessive secretion of saliva. The participants' periodontal status was assessed using the plaque index (PI), assessing bleeding on probing (BoP), probing pocket depth (PPD) and clinical attachment levels (CAL). RESULTS: The mean of PI and BoP was significantly higher in Group A than in Group B (P<0.001), but the PPD, CAL and decayed, missing and filled teeth (DMFT) scores were not significantly different in the two groups according to the statistical results (P>0.05). CONCLUSIONS: The researcher concluded that there is a high risk of periodontal disease among patients with schizophrenia, and there is an even higher risk of periodontal disease induced by medication that increased SFR. Preventive dental protocol should be increased during the dental health care of this disadvantaged patient group.
- 49. A. Eltas, F. Oguz, M. O. Uslu and E. Akdemir. "The effect of periodontal treatment in improving erectile dysfunction: a randomized controlled trial." J Clin Periodontol 40(2): 148-54**
OBJECTIVE: The aim of the study was to evaluate changes in the International Index of Erectile Dysfunction (IIEF) score following periodontal treatment in patients who had severe or moderate erectile dysfunction (ED) and chronic periodontitis (CP). MATERIALS AND METHODS: The authors declare that they have no conflict of interest. The study population consisted of 120

patients with severe or moderate ED and CP. The treatment group (n = 60) comprised patients who received periodontal treatment, whereas the control group (n = 60) comprised patients who did not receive periodontal treatment. The clinical assessments were recorded at baseline, and at 1 month (R1) and 3 months (R2) after intervention for both groups. The periodontal examination involved assessment of the plaque index, bleeding on probing, probing depth and clinical attachment level. The IIEF questionnaire was used to assess the severity of ED. RESULTS: In the treatment group, the improvement in all clinical periodontal parameters was greater than that in the control group, at both R1 and R2 ($p < 0.05$). The increase in the IIEF scores of the treatment group at R2 was higher than that of the control group ($p < 0.05$), whereas the IIEF scores were similar for both groups at R1 ($p > 0.05$). CONCLUSION: The findings of the study suggest that periodontal treatment can provide additional benefits in the improvement of ED. However, further studies are needed to understand the mechanisms of interaction between these diseases.

50. G. Eng, A. Chen, T. Vess and G. S. Ginsburg. "Genome technologies and personalized dental medicine." Oral Dis 18(3): 223-35

The addition of genomic information to our understanding of oral disease is driving important changes in oral health care. It is anticipated that genome-derived information will promote a deeper understanding of disease etiology and permit earlier diagnosis, allowing for preventative measures prior to disease onset rather than treatment that attempts to repair the diseased state. Advances in genome technologies have fueled expectations for this proactive healthcare approach. Application of genomic testing is expanding and has already begun to find its way into the practice of clinical dentistry. To take full advantage of the information and technologies currently available, it is vital that dental care providers, consumers, and policymakers be aware of genomic approaches to understanding of oral diseases and the application of genomic testing to disease diagnosis and treatment. Ethical, legal, clinical, and educational initiatives are also required to responsibly incorporate genomic information into the practice of dentistry. This article provides an overview of the application of genomic technologies to oral health care and introduces issues that require consideration if we are to realize the full potential of genomics to enable the practice of personalized dental medicine.

51. L. Ettinger, P. McClure, L. Kincl and A. Karduna. "Exposure to a workday environment results in an increase in anterior tilting of the scapula in dental hygienists with greater employment experience." Clin Biomech (Bristol, Avon) 27(4): 341-5

BACKGROUND: Dental hygienists suffer a high incidence of shoulder pathology that seems to increase with job longevity. It has been hypothesized that occupational injuries could be due to local muscle fatigue caused by repetitive low level work and awkward and constrained working postures. In the laboratory, scapular kinematics can be temporarily altered using fatiguing protocols. It is unknown whether or not workday fatigue causes changes to scapular kinematics. The aim of this study was to examine if changes in scapular tilt and rotation occurs after a workday in dental hygienists. METHODS: The pre and post workday scapular kinematics were recorded from dental hygienists using an electromagnetic tracking system. All data were recorded within the place of employment of the dental hygienist. RESULTS: Following the workday, there was significantly more scapular anterior tilt in dental hygienists ($P < 0.05$); however, no changes were found for upward or internal rotation. Greater kinematic differences were found for hygienists with greater job longevity. INTERPRETATION: The increase in scapular anterior tilting could be due to post workday fatigue. Anterior tilting of the scapula may have an influence on the development of sub-acromial impingement syndrome. Hygienists with greater duration of work experience may be at greater risk for developing shoulder injuries as they have more anterior tilting of the scapula post workday.

52. R. V. Farac, R. D. Morgental, R. K. Lima, D. Tiberio and M. T. dos Santos. "Pulp sensibility test in elderly patients."

Gerodontology 29(2): 135-9

BACKGROUND: The ageing process transforms the histological composition of the dental pulp and may affect the response to pulp sensibility tests. OBJECTIVES: The aim of this study was to assess the influence of age on pulp response time and on pain intensity. MATERIAL AND METHODS: Fifty elderly patients and 50 young patients were selected. Different classes of teeth were evaluated. The pulp sensibility test was performed with a refrigerant spray. The pulp response time was measured in seconds and the pain intensity was assessed by visual analogue scale. RESULTS: The Spearman coefficient was calculated and detect a positive correlation between age and pulp response time for maxillary incisors, premolars, mandibular incisors, and mean ($p < 0.05$). On the contrary, there was a negative correlation between age and pain intensity for maxillary incisors, mandibular incisors, and mean ($p < 0.05$). Also, the results of elderly and young groups were compared by Mann-Whitney test. Significant difference was noted regarding the pulp response time for maxillary incisors, premolars, mandibular incisors, and mean ($p < 0.05$). Significant difference was detected regarding the pain intensity for mandibular incisors only ($p < 0.05$). CONCLUSIONS: Pulp response time increases when people get older while pain intensity decreases. There were variations among the classes of teeth.

53. J. F. Feijoo, J. Limeres, M. Diniz, A. Del Llano, J. Seoane and P. Diz. "Osseo-integrated dental implants in patients with intellectual disability: a pilot study." Disabil Rehabil 34(23): 2025-30

PURPOSE: The objective of this study was to investigate if intellectual disability (ID) itself constitutes an absolute contraindication to oral rehabilitation with Osseo-integrated implants, or if adequately selected patients can benefit from this dental treatment technique. METHOD: We report a series of eight patients with non-syndromic ID and no associated

neuromuscular disorders, craniofacial abnormalities, or serious systemic complications, in whom oral rehabilitation was performed using implant-supported prostheses, with a follow-up of one to three years. RESULTS: A total of 18 titanium implants were inserted and nine implant-supported prostheses were constructed. Follow-up examination showed that although the majority of implants presented a degree of peri-implant mucositis, all were osseointegrated and the prostheses were functional. CONCLUSIONS: Although there is very little literature on this subject, the results of this pilot study allow us to suggest that Osseointegrated oral implants could constitute a therapeutic option for patients with ID. The success of oral rehabilitation depends fundamentally on appropriate patient selection. IMPLICATIONS FOR REHABILITATION: * Apart from the obvious difficulties related to eating and communication, edentulism is of great cosmetic importance in patients with ID in terms of social acceptance. * It has been suggested that patients with ID do not receive the same level of dental treatment as the general population. * The results of this pilot study allow us to suggest that osseointegrated oral implants could constitute a therapeutic option for patients with ID.

54. N. Foldvary-Schaefer, N. D. Andrews, D. Pornsriniyom, D. E. Moul, Z. Sun and J. Bena. "Sleep apnea and epilepsy: who's at risk?" *Epilepsy Behav* 25(3): 363-7

Obstructive sleep apnea (OSA) is highly prevalent, affecting 25% of men and 10% of women. Treatment reduces seizures in some patients. Awareness of the comorbidity of sleep disturbances in epilepsy has been increasing. No study has explored OSA predictors in patients unselected for epilepsy severity and sleep disorder symptoms. We assessed cross-sectional OSA prevalence and predictors (apnea-hypopnea index [AHI] ≥ 10) in 130 consecutive adults using structured interview, subjective assessments, and polysomnography. Obstructive sleep apnea prevalence was 30%, 16% having moderate-severe disease, rates that markedly exceed general population estimates. Obstructive sleep apnea predictors in multivariate modeling included age, dental problems, and standardized AED dose. Male gender, older age, higher BMI, hypertension, and dental problems were associated with higher AHI. Adults with epilepsy appear at increased risk for OSA, increasing with age and AED load, regardless of gender, BMI, and seizure frequency. These findings support the implementation of routine OSA screening in adult epilepsy clinics.

55. J. E. Frencken, S. C. Leal and M. F. Navarro. "Twenty-five-year atraumatic restorative treatment (ART) approach: a comprehensive overview." *Clin Oral Investig* 16(5): 1337-46

BACKGROUND: The atraumatic restorative treatment (ART) approach was born 25 years ago in Tanzania. It has evolved into an essential caries management concept for improving quality and access to oral care globally. RESULTS: Meta-analyses and systematic reviews have indicated that the high effectiveness of ART sealants using high-viscosity glass ionomers in carious lesion development prevention is not different from that of resin fissure sealants. ART using high-viscosity glass ionomer can safely be used to restore single-surface cavities both in primary and in permanent posterior teeth, but its quality in restoring multiple surfaces in primary posterior teeth cavities needs to be improved. Insufficient information is available regarding the quality of ART restorations in multiple surfaces in permanent anterior and posterior teeth. There appears to be no difference in the survival of single-surface high-viscosity glass-ionomer ART restorations and amalgam restorations. DISCUSSION: The use of ART results in smaller cavities and in high acceptance of preventive and restorative care by children. Because local anaesthesia is seldom needed and only hand instruments are used, ART is considered to be a promising approach for treating children suffering from early childhood caries. ART has been implemented in the public oral health services of a number of countries, and clearly, proper implementation requires the availability of sufficient stocks of good high-viscosity glass ionomers and sets of ART instruments right from the start. Textbooks including chapters on ART are available, and the concept is being included in graduate courses at dental schools in a number of countries. Recent development and testing of e-learning modules for distance learning has increasingly facilitated the distribution of ART information amongst professionals, thus enabling more people to benefit from ART. However, this development and further research require adequate funding, which is not always easily obtainable. The next major challenge is the continuation of care to the frail elderly, in which ART may play a part. CONCLUSION: ART, as part of the Basic Package of Oral Care, is an important cornerstone for the development of global oral health and alleviating inequality in oral care.

56. A. Frydman and H. Nowzari. "Down syndrome-associated periodontitis: a critical review of the literature." *Compend Contin Educ Dent* 33(5): 356-61

Down syndrome, or trisomy 21 (T21), was first described by John Langdon Down in 1866. Down identified the phenotypic expression of patients with circulation and coordination problems as having Down syndrome. More than a century later, Jerome Lejeune hypothesized that nondysjunction during meiosis could lead to trisomy of the 21st chromosome. The incidence of T21 is one in 800 to 1,000 live births in the United States. Generally, these patients now live to age 50 and some to age 60. As life expectancy increases, medical and social costs garner greater attention. Also, societal changes have allowed for better quality of life. Dental practitioners are challenged by the high incidence of early onset aggressive periodontal disease in T21; these patients have higher levels of periodontal pathogens and periodontitis-associated interproximal bone loss. The complex anatomy, physiology, immunology, and microbiology underscore the need for further investigation in specific areas related to dental treatment of these patients. This article is a critical review of the periodontal research concerning T21. Creating awareness enables dental professionals who have the power and knowledge to appropriately address the needs of those affected by T21.

57. **Y. Fu, X. Li, H. Ma, W. Yin, K. Que, D. Hu, M. W. Dodds and M. Tian. "Assessment of chewing sugar-free gums for oral debris reduction: a randomized controlled crossover clinical trial." *Am J Dent* 25(2): 118-22**
 PURPOSE: To assess the oral debris removal efficacy of two commercial sugar-free chewing gums, based on a newly developed oral debris scoring system. METHODS: A randomized, examiner-blinded, three-arm crossover study was conducted, with a 1-week washout period between the crossover phases. 42 healthy adults were randomly assigned to sugar-free stick gum (Wrigley's Extra Freshmint), sugar-free pellet gum (Wrigley's Extra Fruit) or no-gum chewing groups. Subjects consumed a single chocolate cookie, and were examined at baseline, and at 2-, 5-, and 10-minute time points with or without gum-chewing treatment. Primary outcome measures were oral debris scores on the occlusal surface, interproximal and gingival margin areas. The entire test procedure was repeated on two subsequent visits. RESULTS: The baseline conditions in the three groups did not differ significantly. Chewing either stick gum or pellet gum resulted in significantly lower oral debris scores ($P < 0.0001$) compared to the control (no-gum) treatment for all intraoral sites, while no significant difference was observed between the two chewing gum groups. Intra-examiner repeatability of the new scoring criteria was high throughout the study ($Kappa > 0.90$).
58. **S. R. Goud, L. Nagesh and S. Fernandes. "Are we eliminating cures with antibiotic abuse? A study among dentists." *Niger J Clin Pract* 15(2): 151-5**
 CONTEXT: The theme of "World Health Day 2011" is "combat drug resistance- No action today, No cure tomorrow" which is very pertinent. The present study emphatically demonstrates the current issues related to the overwhelming concerns regarding indiscriminate use of antibiotics, leading to a bleak tomorrow where cures may be few. AIM: To know the prescription pattern of antibiotics for various dental procedures by dental practitioners. MATERIALS AND METHODS: A pretested questionnaire was used which contained two sections pertaining to prescription of antibiotics for healthy and medically compromised patients during various dental procedures, with therapeutic and prophylactic considerations. RESULTS: Questionnaire response rate of 66.6% was observed. Amoxicillin emerged as the most preferred antibiotic for dental procedures both as a therapeutic and a prophylactic drug. 50% of the endodontists and 40% of the general dentists opted to prescribe antibiotics during root canal therapy where ideally operative intervention would have sufficed. Overuse of antibiotics for routine scaling and extraction was observed. CONCLUSION: The dental profession as a whole needs to acquire a deeper understanding of the global effects of superfluous antibiotic prescription. Antibiotics when judiciously used are precise life-saving drugs.
59. **C. A. Grover, R. J. Close, E. D. Wiele, K. Villarreal and L. M. Goldman. "Quantifying drug-seeking behavior: a case control study." *J Emerg Med* 42(1): 15-21**
 BACKGROUND: Drug-seeking behavior (DSB) is common in the Emergency Department (ED), yet the literature describing DSB in the ED consists predominantly of anecdotal evidence. STUDY OBJECTIVES: To perform a case-control study examining the relative frequency of DSB in suspected drug-seeking patients as compared to all ED patients. METHODS: We performed a retrospective chart review of 152 drug-seeking patients and of age- and gender-matched controls, noting which of the following behaviors were exhibited during a 1-year period: reporting a non-narcotic allergy, requesting addictive medications by name, requesting a medication refill, reporting lost or stolen medication, three or more ED visits complaining of pain in different body parts, reporting 10 out of 10 pain, reporting > 10 out of 10 pain, three or more ED visits within 7 days, reporting being out of medication, requesting medications parenterally, and presenting with a chief complaint of headache, back pain, or dental pain. RESULTS: The odds ratios for each studied behavior being used by drug seeking patients as compared to controls were: non-narcotic allergy: 3.4, medication by name: 26.3, medication refill: 19.2, lost or stolen medication: 14.1, three or more pain related visits in different parts of the body: 29.3, 10 out of 10 pain: 13.9, three visits in 7 days: 30.8, out of medication: 26.9, headache: 10.9, back pain: 13.6, and dental pain: 6.3. Zero patients in the control group complained of greater than 10-out-of-10 pain or requested medication parenterally, resulting in a calculated odds ratio of infinity for these two behaviors. CONCLUSIONS: Requesting parenteral medication and reporting greater than ten out of ten pain were most predictive of drug-seeking, while reporting a non-narcotic allergy was less predictive of drug-seeking than other behaviors.
60. **R. O. Guare, M. C. Ferreira, M. F. Leite, J. A. Rodrigues, A. Lussi and M. T. Santos. "Dental erosion and salivary flow rate in cerebral palsy individuals with gastroesophageal reflux," *J Oral Pathol Med* 41(5): 367-71**
 BACKGROUND: A high prevalence of gastroesophageal reflux (GERD) has been observed in individuals with cerebral palsy (CP). One of the main risks for dental erosion is GERD. This study aimed to evaluate the presence of GERD, variables related to dental erosion and associated with GERD (diet consumption, gastrointestinal symptoms, bruxism), and salivary flow rate, in a group of 46 non-institutionalized CP individuals aged from 3 to 13 years. METHODS: Twenty CP individuals with gastroesophageal reflux (GERDG) and 26 without gastroesophageal reflux (CG) were examined according to dental erosion criteria, drinking habits, presence of bruxism, and salivary flow rate. A face-to-face detailed questionnaire with the consumption and frequency of acid drinks, gastrointestinal symptoms (regurgitation and heart burn), and the presence of bruxism were answered by the caregivers of both groups. Unstimulated whole saliva was collected under slight suction, and salivary flow rate (ml/min) was calculated. RESULTS: The GERDG presented higher percentages of younger quadriplegics individuals compared to CG. The presence of regurgitation, heart burn, and tooth erosion (Grade 1) was significantly more prevalent in GERDG. It was observed difference in

the salivary flow rate between the studied groups. On logistic multivariate regression analysis, the unique variable independently associated with the presence of GERD was dental erosion (P = 0.012, OR 86.64). CONCLUSION: The presence of GERD contributes significantly to dental erosion in the most compromised individuals with quadriplegics cerebral palsy individuals, increasing the risk of oral disease in this population.

- 61. D. R. Guay. "Antimicrobial prophylaxis in non-cardiac prosthetic device recipients." Hops Pract 40(1): 44-74**
 BACKGROUND: Secondary antimicrobial prophylaxis involves the use of ≥ 1 antimicrobial agent just prior to the time when a diagnostic/therapeutic procedure, which may induce infection, is to be performed. In the context of this article, antimicrobial agent(s) are administered to patients with ≥ 1 implanted prosthetic device in order to prevent metastatic seeding of the device(s) during bacteremia induced by a diagnostic/therapeutic procedure. Antimicrobial agents used in this context are only administered peri-procedurally. Secondary antimicrobial prophylaxis of endocarditis in recipients of cardiac prosthetic materials (including valves, shunts, conduits, and patches) has been reasonably well established. However, secondary antimicrobial prophylaxis in recipients of other types of prosthetic devices has been the subject of much controversy, with a wide variety of recommendations being made. OBJECTIVES: The purpose of this article was to conduct a narrative review of the published literature on the topic of secondary antimicrobial prophylaxis in recipients of non-cardiac prosthetic devices and make evidence-based recommendations for each type of device, where possible. METHODS: Medline/PubMed and EMBASE databases were searched for English-language articles published from 1950 to the present (January 2012). Search terms included "prophylaxis," "antibiotics," "antimicrobials," "prosthetic devices," "prosthesis-related infections," "bacteremia," the names of the individual types of prosthetic devices, and the names of the individual procedures potentially inducing bacteremia. Articles dealing with any aspect relevant to this topic were eligible for review. The bibliographies of retrieved articles were also carefully scanned to identify any articles not previously identified. RESULTS: Based on review of the available literature, secondary antimicrobial prophylaxis is justified in only a few specific circumstances. For recipients of prosthetic vascular grafts/stents, hemodialysis arterial-venous shunts, and ventriculoatrial/ventriculovenous shunts, prophylaxis is warranted during the initial 6 months, initial 6 weeks, and at all times after implantation/revision, respectively, when dental procedures capable of inducing high-level bacteremia are planned. Prosthetic joint recipients should receive prophylaxis in the following 3 circumstances: 1) patient is to undergo dental procedure(s) capable of inducing high-level bacteremia plus either the patient is still within 2 years of device implantation/revision or the patient has ≥ 1 risk factor for hematogenous prosthetic joint infection; 2) patient is to undergo genitourinary tract procedure(s) capable of inducing high-level bacteremia plus the patient has ≥ 1 risk factor for high-risk bacteriuria; and 3) patient is to undergo perforating dermatologic surgery on the oral mucosa or at skin sites at increased risk for surgical site infection plus patient has ≥ 1 risk factor for hematogenous prosthetic joint infection. The data are inadequate to justify secondary antimicrobial prophylaxis for recipients of other types of prosthetic devices. On the basis of 9 surveys of prescriber behavior, it is apparent that there exists, over a wide geographic area, a wide disconnect between clinical practice and the secondary antimicrobial prophylaxis guidelines issued by the professional organizations representing these prescribers. Antimicrobial agent overuse was especially problematic among orthopedic and colorectal surgeons, urologists, and family practitioners. Dentists and maxillofacial surgeons followed guidelines more closely. CONCLUSION: Device-, procedure-, and patient characteristic-dependent factors elicited over many years have narrowed down the secondary antimicrobial prophylaxis recommendations for non-cardiac prosthetic devices to a small number. Despite this, physician prescribers frequently do not follow prophylaxis guidelines established by their own professional organizations. Risk-benefit and cost-effectiveness studies have found that no prophylaxis is actually superior to universal prophylaxis, likely due to known antimicrobial toxicities, such as anaphylactic/anaphylactoid reactions and Clostridium difficile-associated disease. Much work remains in establishing and extending the scientific basis for secondary antimicrobial prophylaxis and transforming this knowledge into appropriate action by the clinician.
- 62. M. Guelmann, R. Brackett, N. Beavers and R. E. Primosch. "Effect of continuous versus interrupted administration of nitrous oxide-oxygen inhalation on behavior of anxious pediatric dental patients: a pilot study" J Clin Pediatr Dent 37(1): 77-82**
 OBJECTIVE: The purpose of this study was to determine the effect of interrupted administration of nitrous oxide (N₂O) inhalation, after obtaining profound local anesthesia, on the behavior of mild to moderately anxious pediatric patients during routine restorative dentistry. STUDY DESIGN: Healthy children, 5 to 8 years old, requiring nitrous oxide/oxygen inhalation sedation and bilateral mandibular restorative treatment performed in two sequential appointments under local anesthesia were recruited for this study. After profoundness of the local anesthesia was confirmed, the subject was randomly assigned to either Protocol A (50% N₂O/50% O₂) or Protocol B (100% O₂) and restorative dental care was completed. On the second appointment, the subject was assigned to the alternate protocol. RESULTS: Hemoglobin oxygen saturation remained constant with no episodes of oxygen desaturation recorded. There were no statistically significant differences (P > .05) in pulse rate or behavior change noted between the two protocols. CONCLUSION: The implication of this pilot study was significant in consideration of the desire to minimize chronic exposure to ambient nitrous oxide and its potential health hazards to the dental team. These findings challenge the traditional practice of N₂O maintenance throughout the dental appointment.
- 63. R. Gupta, K. Sharma and U. K. Dhiman. "Effect of a combination of oral midazolam and low-dose ketamine on anxiety, pain, swelling, and comfort during and after surgical extractions of mandibular third molars." Indian J Dent Res 23(2): 295-6**

PURPOSE: To assess the clinical efficacy of a combination of oral midazolam plus low-dose ketamine for reducing anxiety during surgery and in preventing postoperative pain and swelling after the surgical extraction of third molars. **MATERIALS AND METHODS:** Thirty patients requiring bilateral surgical extraction of mandibular third molars were included in this study. Prior to extraction of the tooth on the right side, a combination of oral midazolam and low-dose ketamine was given to the patient, while this protocol was not followed for extraction of the tooth on the left side. Anxiety levels were checked before surgery. The postoperative pain and swelling and patient's comfort with and without the premedication were compared. **RESULTS:** Facial swelling on the postoperative days was lower on the right side than on the left. Pain scores at 30 minutes and 24 hours after surgery were significantly higher on the left side. Also, anxiety during the surgery was less and comfort levels were higher postoperatively when the combination of oral midazolam plus low-dose ketamine was used. **CONCLUSIONS:** Premedication with midazolam plus low-dose ketamine prior to surgical extraction of third molars can provide the patient with a comfortable procedure and good postoperative analgesia, with less swelling and significantly less pain.

64. **B. D. Hayes, L. Zaharna, M. E. Winters, A. A. Feemster, B. J. Browne and J. M. Hirshon. "To-Go medications for decreasing ED return visits." *Am J Emerg Med* 30(9): 2011-4**
OBJECTIVES: The primary objective was to determine if providing patients with a complete course of antibiotics for select conditions would decrease the rate of return to the emergency department (ED) within 7 days of the initial visit. **METHODS:** In an urban, academic medical center, we compared patients who received medications at discharge (To-Go medications) with patients who received standard care (a prescription at discharge). Emergency department patients were included if they were older than 18 years; had a discharge diagnosis International Classification of Diseases, Ninth Revision, code for urinary tract infection, pyelonephritis, cellulitis, or dental infection; and presented initially between January and December 2010. Candidates had limited health insurance or were discharged when nearby pharmacies were closed. Return visits were included if the condition was related to the initial diagnosis. Wound checks and scheduled revisits were excluded. Medications dispensed were penicillin, clindamycin, sulfamethoxazole-trimethoprim, and nitrofurantoin. **RESULTS:** A total of 4257 individuals were seen in initial ED visits for the included conditions. Comparing the 243 individuals given medications with the 4014 who were not given medications, the To-Go medications group was less likely to return than the comparison group (2.5% vs. 5.9%; $P = .026$). The cellulitis subgroup also showed a significant reduction in return visits (1.6% vs. 6.9%; $P = .024$). Three hundred eighteen courses of medication were given to the 243 individuals for a total cost of \$1123. **CONCLUSIONS:** For a 1-year expense of \$1123, we demonstrated a 50% reduction in ED return visits for patients who were given a free, complete course of antibiotics at discharge for select conditions.
65. **S. M. Heckmann, E. Kirchner, M. Grushka, M. G. Wichmann and T. Hummel. "A double-blind study on clonazepam in patients with burning mouth syndrome." *Laryngoscope* 122(4): 813-6**
OBJECTIVES/HYPOTHESIS: In the treatment of burning mouth syndrome (BMS), various approaches have been tried with equivocal results. The aim of the present randomized clinical trial was to determine the efficacy of clonazepam, a GABA agonist designed as an antiepileptic drug that exerts the typical effects of benzodiazepines. **STUDY DESIGN:** Randomized clinical trial. **METHODS:** Twenty patients with idiopathic BMS were carefully selected. Clonazepam (0.5 mg/day, $n = 10$) or placebo (lactose, $n = 10$) were randomly assigned to the patients. **RESULTS:** Patients on clonazepam significantly improved in pain ratings ($P < .001$). These changes were less pronounced in the placebo group ($P < .11$). No significant changes were observed in a mood scale ($P = .56$) or for depression scores ($P = .56$). Taste test and salivary flow increased over sessions, but were not different between groups ($P = .83$ and $P = .06$, respectively). **CONCLUSIONS:** Clonazepam appears to have a positive effect on pain in BMS patients.
66. **M. J. Hens, V. Alonso-Ferreira, A. Villaverde-Hueso, I. Abaitua and M. Posada de la Paz. "Cost-effectiveness analysis of burning mouth syndrome therapy. "Community Dent Oral Epidemiol." 40(2): 185-92**
OBJECTIVE: To study the cost-effectiveness of four alternative treatments for burning mouth syndrome (BMS). **METHODS:** A cost-effectiveness analysis was conducted from a healthcare payer perspective of four therapy strategies (amisulpride, paroxetine, sertraline and topical clonazepam), using a decision-tree model that incorporated direct healthcare costs and probabilities associated with the possible events and outcomes. Average cost-effectiveness and incremental cost-effectiveness ratios were calculated. Sensitivity analyses included the costs of brand name and generic drugs in five European countries (France, Italy, the Netherlands, Spain and UK), as well as two scenarios with different treatment length. **RESULTS:** Of the drugs analyzed, topical clonazepam proved to be the most cost-effective therapy. Although generic proved more efficient than brand name drugs, they displayed no advantage over brand name topical clonazepam. The Netherlands was the country with the highest overall drug efficiency. Sensitivity analyses highlighted the robustness of the model, because topical clonazepam proved to be the most efficient therapy under all the different scenarios. **CONCLUSIONS:** Topical clonazepam, which previous analyses of clinical evidence have shown to be the drug of choice for BMS, also proved to be the most cost-effective of the drugs analyzed for this condition.
67. **J. Hogan and J. Radhakrishnan. "The assessment and importance of hypertension in the dental setting." *Dent Clin North Am* 56(4): 731-45**

Many patients with hypertension have uncontrolled disease. The dental visit presents a unique opportunity to screen patients for undiagnosed and undertreated hypertension, which may lead to improved monitoring and treatment. Although there are no clinical studies, it is generally recommended that nonemergent procedures be avoided in patients with a blood pressure of greater than 180/110 mm Hg. Because of the high prevalence of disease and medication use for hypertension, dentists should be aware of the oral side effects of antihypertensive medications as well as the cardiovascular effects of medications commonly used during dental visits.

- 68. M. A. Hoge, M. R. Howard, D. P. Wallace and K. D. Allen. "Use of video eyewear to manage distress in children during restorative dental treatment." *Pediatr Dent* 34(5): 378-82**
PURPOSE: The purpose of this study was to evaluate the effectiveness of video eyewear in reducing disruptive behavior in a typical pediatric dental population during restorative treatment appointments. **METHODS:** One hundred twenty-eight 4- to 16-year-olds were recruited from a continuous sample of patients seen in an urban dental clinic. Direct observations of distress, self-reported measures of pain, and patient satisfaction were obtained in a randomized clinical trial comparing 2 different types of glasses: (1) wraparound video eyewear; and (2) sunglasses (typical treatment in this dental clinic). **RESULTS:** Analyses of covariance, using treatment condition (control vs. experimental) as the primary independent variable and controlling for the effects of age, found that children wearing video eyewear glasses demonstrated significantly less disruptive behavior than those in the control group and that they liked their eyewear significantly better than those wearing the regular sunglasses. **CONCLUSIONS:** Wraparound video eyewear can be an effective approach to managing distress in children undergoing restorative dental treatment.
- 69. J. Holbrook, J. Minocha and A. Laumann. "Body piercing: complications and prevention of health risks." *Am J Clin Dermatol* 13(1): 1-17**
 Body and earlobe piercing are common practices in the USA today. Minor complications including infection and bleeding occur frequently and, although rare, major complications have been reported. Healthcare professionals should be cognizant of the medical consequences of body piercing. Complications vary depending on the body-piercing site, materials used, experience of the practitioner, hygiene regimens, and aftercare by the recipient. Localized infections are common. Systemic infections such as viral hepatitis and toxic shock syndrome and distant infections such as endocarditis and brain abscesses have been reported. Other general complications include allergic contact dermatitis (e.g. from nickel or latex), bleeding, scarring and keloid formation, nerve damage, and interference with medical procedures such as intubation and blood/organ donation. Site-specific complications have been reported. Oral piercings may lead to difficulty speaking and eating, excessive salivation, and dental problems. Oral and nasal piercings may be aspirated or become embedded, requiring surgical removal. Piercing tracts in the ear, nipple, and navel are prone to tearing. Galactorrhea may be caused by stimulation from a nipple piercing. Genital piercings may lead to infertility secondary to infection, and obstruction of the urethra secondary to scar formation. In men, priapism and fistula formation may occur. Women who are pregnant or breastfeeding and have a piercing or are considering obtaining one need to be aware of the rare complications that may affect them or their child. Though not a 'complication' per se, many studies have reported body piercing as a marker for high-risk behavior, psychopathologic symptoms, and anti-social personality traits. When it comes to piercing complications, prevention is the key. Body piercers should take a complete medical and social history to identify conditions that may predispose an individual to complications, and candidates should choose a qualified practitioner to perform their piercing. As body piercing continues to be popular, understanding the risks of the procedures as well as the medical and psychosocial implications of wearing piercing jewelry is important for the medical practitioner.
- 70. J. Horacek, T. Palenicek, J. Malek, V. Scigel, A. Kurzova and L. Hess. "The influence of clonidine on oral ketamine-midazolam premedication in intellectually disabled patients indicated for dental procedures: double-blind comparison of two sedation regimes." *Neuro Endocrinol Lett* 33(4): 380-4**
BACKGROUND: Dental procedures on intellectually disabled patients represent a clinical challenge. The oral administration of sedating drugs can remediate the problems with cooperation and enable the medical procedures to take place. Standard guidelines are lacking for oral sedation of the intellectually disabled. **OBJECTIVE:** To compare two oral combinations of sedating drugs in terms of time to the onset and achievement of full sedation, vital signs, behavioral measures and safety. **METHODS:** In a group of 29 intellectually disabled patients we compared two oral combinations for analgo-sedation: ketamine (5 mg/kg) - clonidine 2 microg/kg - midazolam 0.3 mg/kg (N=17) or ketamine 5 mg/kg - midazolam 0.3 mg/kg (N= 12 patients). Drugs were dissolved in a sweet drink. **RESULTS:** Full sedation was achieved within 25 min. in 27 patients and serious side effects were not detected. Clonidine in combination with ketamine and midazolam did not exert any significant effect by means of the onset of sedation, time to the achievement of full sedation, vital signs and behavioral measures of sedation (Vancouver Interaction and Calmness Scale) and agitation (Pittsburgh Agitation Scale). **CONCLUSIONS:** Our study is the first to document that oral administration of ketamine and midazolam in low doses represents a safe and effective method of premedication in intellectually disabled patients indicated for dental procedures. Clonidine co-administration did not exert any substantial benefit and should be left out in this clinical setting.
- 71. W. W. Hsiao, K. L. Li, Z. Liu, C. Jones, C. M. Fraser-Liggett and A. F. Fouad. "Microbial transformation from normal oral microbiota to acute endodontic infections." *BMC Genomics* 13: 345**

BACKGROUND: Endodontic infections are a leading cause of oro-facial pain and tooth loss in western countries, and may lead to severe life-threatening infections. These infections are polymicrobial with high bacterial diversity. Understanding the spatial transition of microbiota from normal oral cavities through the infected root canal to the acute periapical abscess can improve our knowledge of the pathogenesis of endodontic infections and lead to more effective treatment. We obtained samples from the oral cavity, infected root canal and periapical abscess of 8 patients (5 with localized and 3 with systemic infections). Microbial populations in these samples were analyzed using next-generation sequencing of 16S rRNA amplicons. Bioinformatics tools and statistical tests with rigorous criteria were used to elucidate the spatial transition of the microbiota from normal to diseased sites. **RESULTS:** On average, 10,000 partial 16S rRNA gene sequences were obtained from each sample. All sequences fell into 11 different bacterial phyla. The microbial diversity in root canal and abscess samples was significantly lower than in the oral samples. Streptococcus was the most abundant genus in oral cavities while Prevotella and Fusobacterium were most abundant in diseased samples. The microbiota community structures of root canal and abscess samples were, however, more similar to each other than to the oral cavity microbiota. Using rigorous criteria and novel bioinformatics tools, we found that Granulicatella adiacens, Eubacterium yurii, Prevotella melaninogenica, Prevotella salivae, Streptococcus mitis, and Atopobium rimae were over-represented in diseased samples. **CONCLUSIONS:** We used a novel approach and high-throughput methodologies to characterize the microbiota associated normal and diseased oral sites in the same individuals.

72. M. Y. Huang, N. Matsuura, Y. Kaneko and T. Ichinohe. "Midazolam increases bite force during intravenous sedation." J Oral Maxillofac Surg 70(8): e458-63

PURPOSE: Although there have been many reports on the effects of midazolam on vital function and the recovery profile, little is known about muscle power during sedation. The purpose of this study was to investigate the effects of midazolam on muscle power during moderate sedation. **MATERIALS AND METHODS:** The subjects were 20 male volunteers classified as American Society of Anesthesiologists physical status I. Each subject underwent 2 experiments in a randomized crossover manner (midazolam and control groups). After baseline data were obtained, midazolam (0.05 mg/kg) was administered. Thirty minutes after midazolam administration, flumazenil (0.5 mg) was administered to antagonize the sedative effects of midazolam in the midazolam group. Heart rate, noninvasive blood pressure, arterial oxygen saturation, respiratory rate, and the bispectral index value were monitored. The Observer's Assessment of Alertness/Sedation scale and the correct-answer rate of the Stroop color word test were assessed. To evaluate muscle power, grip strength and bite force were measured. After baseline measurement, all variables were measured 2, 5, 10, 20, and 30 minutes after midazolam administration and 5, 10, and 20 minutes after flumazenil administration. For statistical comparisons, repeated measures analysis of variance, the Friedman chi(2) test, and the Student t test for paired samples were used. **RESULTS:** No significant changes were observed for any variable in the control group. In the midazolam group, the bispectral index value and the Observer's Assessment of Alertness/Sedation scale decreased during midazolam sedation. The correct-answer rate of the Stroop color word test decreased 5 and 10 minutes after midazolam administration. Grip strength decreased during midazolam sedation. Bite force increased immediately after midazolam administration and remained increased even after flumazenil administration. **CONCLUSIONS:** Although the detailed mechanisms are unknown, bite force increases despite the muscle-relaxant action of midazolam during sedation and persists even with flumazenil reversal.

73. L. B. Huling, L. Baccaglini, L. Choquette, R. S. Feinn and R. V. Lalla. "Effect of stressful life events on the onset and duration of recurrent aphthous stomatitis." J Oral Pathol Med 41(2): 149-52

BACKGROUND: Recurrent aphthous stomatitis (RAS) is a common and painful oral mucosal disease. Possible etiologies include genetics, vitamin deficiencies, trauma, immune dysfunction, and stress. The goal of this study was to examine the relationship between the occurrence, type, and magnitude of stressful events and the onset and duration of RAS episodes. **METHODS:** One hundred and sixty subjects with a history of RAS completed a weekly phone survey for up to 1 year, providing data on the occurrence of RAS episodes and details of any stressful events they experienced during the previous week. During RAS episodes, subjects also completed daily paper diaries that recorded incidence and duration of the RAS episode. Stressful events were quantified using the validated Recent Life Changes Questionnaire (RLCQ) and were classified as mental or physical stressors. **RESULTS:** Stressful life events were significantly associated with the onset of RAS episodes ($P < 0.001$), however, not with the duration of the RAS episodes. Experiencing a stressful life event increased the odds of an RAS episode by almost three times ($OR = 2.72$; $95\% CI = 2.04-3.62$). When controlled for each other, mental stressors had a larger effect ($OR = 3.46$, $95\% CI = 2.54-4.72$) than physical stressors ($OR = 1.44$; $95\% CI = 1.04-1.99$) on the occurrence of RAS episodes. RAS episodes did not occur more frequently or last longer with increasing stress severity. **CONCLUSIONS:** In patients with a history of RAS, stressful events may mediate changes involved in the initiation of new RAS episodes. Mental stressors are more strongly associated with RAS episodes than physical stressors.

74. J. R. Hupp. "Dental anesthesiology: a specialty or a Specialty?" J Oral Maxillofac Surg 70(9): 2021-2

75. M. Ishii, H. Higuchi, S. Maeda, Y. Tomoyasu, M. Egusa and T. Miyawaki. "The influence of oral VPA on the required dose of propofol for sedation during dental treatment in patients with mental retardation: a prospective observer-blinded cohort study." Epilepsia 53(1): e13-6

In sedation of dental patients with moderate or severe mental retardation, it is difficult to identify the optimum sedation level and to maintain it appropriately. Moreover, many patients have concomitant epilepsy and are medicated with oral antiepileptic drugs (AEDs), which influence the drug-metabolizing enzymes. In particular, valproate (VPA) has been demonstrated to inhibit propofol metabolism in vitro. Therefore, the objective of the present study was to investigate the clinical influence of oral VPA on the required dose of propofol for sedation, with use of a prospective cohort study design. We studied 45 patients with moderate or severe mental retardation who underwent dental treatment under sedation. Propofol was infused, and sedation was maintained at the same level in all patients using a bispectral index (BIS) monitor. After the completion of treatment for the scheduled patients, patients were divided into those with oral VPA treatment (VPA group: 20 patients) and without any oral antiepileptic treatment (control group: 25 patients). The propofol dose required for sedation and times to the recovery of the eyelash reflex and spontaneous eye opening were evaluated. The median required propofol doses in the VPA and control groups were 4.15 (range 1.97-5.88) and 5.67 (2.92-7.17) mg/kg/h, respectively. We observed a statistically significant difference between the two patient groups with respect to median VPA dose ($p < 0.01$). However, no statistically significant differences were noted in the time until eyelash reflex recovery or spontaneous eye opening between the two groups. The results suggest that oral VPA reduces the dose of propofol required for sedation during dental treatment in patients with moderate or severe mental retardation.

76. A. Ito, M. Hayashi, T. Hamasaki and S. Ebisu. "How regular visits and preventive programs affect onset of adult caries." *J Dent Res* 91(7 Suppl): 52S-58S

If it is to be effective, preventive dental treatment must be based on an individual's risk of caries and periodontal disease. However, hitherto, preventive treatment has been generally conducted without proper caries-risk assessment because of lack of knowledge about an individual's caries risk. This study sought to identify high-risk adult patients and examine the effectiveness of preventive programs. Data for 442 patients from a single general practice who met the inclusion criteria were analyzed. Multiple logistic-regression analysis showed that high levels of mutans streptococci (SM) correlated with the onset of primary and secondary caries, with odds ratios of 2.34 (95%CI: 1.15-4.76, $p = 0.019$) and 2.22 (95%CI: 1.06-4.62, $p = 0.034$), respectively. Lactobacilli (LB) also correlated with secondary caries, with an odds ratio of 3.34 (95%CI: 1.35-6.85, $p = 0.007$). When the patients were checked after three years of a preventive program, the correlation with SM and LB disappeared. Survival analyses by Cox regression models and Kaplan-Meier methods showed that secondary caries was difficult to control by conventional preventive programs alone in patients with high levels of cariogenic bacteria. In conclusion, cariogenic bacteria play an important role in the incidence of caries, and additional intensive preventive treatment should be considered for high-risk patients.

77. B. L. Jablonowski, J. A. Bartoloni, D. M. Hensley and K. S. Vandewalle. "Fluoride release from newly marketed fluoride varnishes." *Quintessence Int* 43(3): 221-8

OBJECTIVE: New fluoride varnishes have been marketed that reportedly release more fluoride (Enamel Pro) or release fluoride more slowly (Vanish XT). The purpose of this study was to compare the amount and rate of fluoride release of new fluoride varnishes with other traditional fluoride varnishes. **METHOD AND MATERIALS:** Extracted molars were cut into block sections. The enamel surfaces of the sections were painted with Enamel Pro, Duraphat, Vanish, or Vanish XT fluoride varnishes. One group was not treated and served as a negative control. The tooth sections were immersed in artificial saliva. The concentration of fluoride in parts per million was measured after the first 30 minutes, daily for the first week, and weekly until the level was below the limit of detection. Fluoride release was plotted over time. Cumulative fluoride release and rate of release (slope) were analyzed using one-way ANOVA/Tukey ($\alpha = .05$). **RESULTS:** Enamel Pro had the greatest cumulative fluoride release. There was no significant difference between Duraphat and Vanish. Vanish XT had the lowest cumulative fluoride release. The rate of fluoride release from 1 week to limit of detection was Enamel Pro > Vanish > Duraphat > Vanish XT. **CONCLUSION:** The two newly marketed fluoride varnishes (Enamel Pro and Vanish XT) had significantly different fluoride release from the two conventional fluoride varnishes (Duraphat and Vanish).

78. O. S. Janjua, U. Luqman, M. W. Ibrahim and I. Shah. "Transpapillary versus palatal injection technique for maxillary tooth extractions." *J Coll Physicians Surg Pak* 22(3): 143-6

OBJECTIVE: To compare the pain during injection administration and efficacy of transpapillary injection with palatal injection for simple maxillary tooth extractions. **STUDY DESIGN:** Randomized control trial. **PLACE AND DURATION OF STUDY:** The oral and maxillofacial surgery department of Armed Forces Institute of Dentistry, Rawalpindi, Pakistan, from July to December 2009. **Methodology:** Patients requiring simple extraction in maxilla were randomly divided into two groups each consisting of 100 patients. Group 1 was given conventional palatal injection and served as a control, whereas Group 2 received the transpapillary injection. Two percent Lignocaine with Adrenaline (1:100,000) was used for both groups. Pain during injection and then during the extraction were recorded for both groups using the Visual Analogue Scale and Faces Pain Score Scales on specially designed proformas. The data was analyzed using SPSS version 17.0 and independent t-test was applied to compare pain between both groups. P-value of less than 0.05 was considered to be statistically significant. **RESULTS:** Group 1 consisted of 61 males and 39 females with an age ranging from 11-73 years (mean= 39.92 + 14.85 years) while Group 2 consisted of 59 males and 41 females with an age ranging from 10-70 years (mean= 39.31 + 18.53 years). Results of FPS and VAS scores for injection and procedure were analyzed using independent t-test. Difference of scores for pain during injection were found to be significant ($p < 0.05$)

while the scores for the procedure were seen to be statistically insignificant ($p > 0.05$) showing that transpapillary injection is equally effective for maxillary extractions as palatal injection but with significantly decreased pain during injection.
CONCLUSION: Transpapillary injection is an easy and effective way of eliminating the pain of palatal injection for maxillary extractions.

- 79. T. J. Ji, J. Y. Kan, K. Rungcharassaeng, P. Roe and J. L. Lozada. "Immediate loading of maxillary and mandibular implant-supported fixed complete dentures: a 1- to 10-year retrospective study." J Oral Implantol 38 Spec No: 469-76**
 This study evaluated the success rates of 50 full-arch maxillary and/or mandibular implant-supported fixed complete dentures. After a mean follow-up time of 42.1 months, 269 implants remained in function, which corresponded to cumulative implant success rates of 85.2% and an absolute success rate of 90.6% (269/297 implants). This study suggested that higher implant failure rates might be associated with a dental history of bruxism (29.3%) vs. no history of bruxism (4.6%) and surgeons with limited experience (≤ 5 years; 12.2%) vs. surgeons with experience (2.4%).
- 80. K. J. Jobman, K. Weber-Gasparoni, R. L. Ettinger and F. Qian. "Caregivers' perceived comfort regarding oral care delivery in group homes: a pilot study." Spec Care Dentist 32(3): 90-8**
 The purpose of this study was to investigate the perceived comfort, behaviors, and barriers reported by group home caregivers while providing oral health care to individuals with special healthcare needs (SHCN). A 23-item survey was sent to 428 caregivers in two group homes in Iowa. Bivariate and logistic regression models were used to analyze data ($p \leq 0.05$). The overall response rate was 32%. An analysis of the bivariate and multivariate logistic regression indicated that caregivers who felt more comfortable providing care for individuals who verbally and physically resisted oral health care had worked more than 2 years at their current location ($p = 0.0323$), felt "neutral to very comfortable" brushing ($p = 0.0020$) and flossing ($p < 0.0001$) the teeth of individuals with SHCN, and reported "sometimes to always" experiencing these individuals not opening their mouths ($p = 0.0127$). Comfort in providing oral care to individuals with SHCN appears to be linked to experience and length of time working with this population.
- 81. A. Johansen, A. Westergren and G. Johansen. "Dental implants from the patient's perspective: transition from tooth loss, through amputation to implants - negative and positive trajectories." J Clin Periodontol 39(7): 681-7**
AIM: The aim of this study was to explore patients' expectations on and experiences from dental implant treatment through deep-interview technique. **MATERIAL & METHODS:** A qualitative study design was chosen and 17 patients were interviewed by open-ended questions. All patients in the study had a previous history of periodontal disease with, in most cases, many years of treatment. The interviews were transcribed; a coding process was used according to qualitative conventional content analysis. **RESULTS:** In the analysis, a core category was identified as "Transition from tooth loss, to 'Amputation', and to implants - negative and positive trajectories". When the patients faced the fact that it was not possible to keep the teeth any longer, a period of fear, shame and denial, which also affected their social life negatively followed. After they received their implants and the chewing ability and appearance became better, it also improved their quality of life. **CONCLUSION:** Treatment with dental implants improved function, enhanced self-esteem, social life and, thus quality of life. In clinical practice, information about dental implants and motivational strategies are needed during the period before getting dental implants. Follow-up is important thereafter, capturing both the pros and cons with implants.
- 82. D. L. Jones and K. V. Rankin. "Management of the oral sequelae of cancer therapy." Tex Dent J 12(5): 461-8**
 Oral cancer and the oral sequelae of treatment for oral and other malignancies can significantly affect a patient's oral and systemic health, as well as have a profound impact on quality of life. Compromised oral health prior to, during, and following cancer therapy can affect treatment outcomes. Increasingly, dental professionals in the community are being called upon to provide care for these individuals. Radiation therapy is routinely used for tumors of the head and neck, delivering a concentrated radiation dose to the tumor, but also to the immediately surrounding tissue. Oral complications are related to the site radiated and the total radiation dose. Cancer chemotherapy is provided as a primary treatment for some cancers and as an adjunctive modality for other cancers. The goal is to eradicate the rapidly growing cells of the tumor, but chemotherapy is often toxic to other cells that rapidly divide normally including the oral mucosa. The use of combined chemotherapy and radiation is now considered standard for most locally advanced tumors of the head and neck. The toxicities of this combined therapy are essentially the same as with radiation alone, but develop more rapidly and are typically more severe when they reach maximum level. The most common oral sequelae of cancer treatment are: xerostomia, the sensation of a dry mouth as a result of damage to the salivary glands and/or medication; mucositis, the inflammation and ulceration of the oral mucosa; and infection as a result of the loss of mucosal integrity. Management of oral health during cancer therapy includes identifying at-risk patients, patient education, appropriate pretreatment interventions, and timely management of complications. Appropriate preventive and therapeutic measures will help minimize the risk of oral and associated systemic complications, improve treatment outcomes, and improve the patient's quality of life.
- 83. J. K. Joo, Y. J. Lim, H. B. Kwon and S. J. Ahn. "Panoramic radiographic evaluation of the mandibular morphological changes in elderly dentate and edentulous subjects." Acta Odontol Scand 71(2): 357-62**

OBJECTIVE: The aim of the present study was to analyze the changes in the gonial angle, ramus height, condyle height and cortical bone thickness in relation to gender and dental status in elderly patients. **MATERIALS AND METHODS:** The study population comprised 240 patients (age ranged from 60-69 years) who had digital panoramic radiographs taken for various purposes. One group consisted of 120 patients, 60 men and 60 women, who had all natural teeth present except for third molars. The second group consisted of the remaining 120 patients (60 men and 60 women) who were in a completely edentulous state (maxilla and mandible). The gonial angle, ramus height, condylar height and cortical bone thickness of the mandible were measured by computer software on their panoramic radiographs. **RESULTS:** Women showed larger gonial angles than men, while men had greater cortical bone thickness and ramus height ($p < 0.05$). However, no significant difference in condylar height was found between both genders ($p > 0.05$). Edentulous subjects had a larger gonial angle than dentate subjects, while dentate subjects had greater cortical bone thickness on both sides and left side of condylar height ($p < 0.05$). The gonial angle had statistically negative correlations with cortical bone thickness and ramus height, regardless of gender. **CONCLUSIONS:** The outcomes of the present study indicate that the edentulous women undergo morphological changes of the mandible influenced by the dental status more than men.

84. S. M. Junior, S. E. Santos, L. E. Kluppel, L. Asprino, R. W. Moreira and M. de Moraes. "A comparison of motorcycle and bicycle accidents in oral and maxillofacial trauma." J Oral Maxillofac Surg 70(3)

PURPOSE: The aim of this study was to present a large series of motorcycle- and bicycle-related traumas to the face in an attempt to identify the injury pattern in motorcyclists and bicyclists. **PATIENTS AND METHODS:** Data were collected from patients during a 10-year period (1999 through 2009), which included demographic data, diagnosis of facial fractures, use of protective devices, dento-alveolar trauma, and facial soft tissue injuries. **RESULTS:** There were 556 patients with bicycle accidents and 367 with motorcycle accidents. Men were involved in 79% (436) of bicycle accidents and 82% (299) of motorcycle accidents. Young male patients were more frequent in bicycle and motorcycle accidents. Two hundred fifty bicyclists showed 311 maxillofacial fractures. Two hundred twenty-one motorcyclists showed 338 maxillofacial fractures. Motorcycle accidents caused multiple fractures in more patients. Seventy-six percent of motorcyclists were using helmets at the time of the accidents, whereas 6% of bicyclists were using helmets. Motorcyclists showed a larger number of lacerations, whereas bicyclists showed a larger number of abrasions. Avulsion was the most common dento-alveolar injury for these accident types. Hospital stays were 3.8 days for motorcyclists and 1.3 days for bicyclists. **CONCLUSIONS:** The high-impact collisions typically observed in motorcycle accidents is directly related to larger percentages of soft tissue lacerations and facial fractures. The low-impact trauma that is observed in bicycle accidents is more commonly associated with soft tissue abrasion, hematoma, and dento-alveolar fractures. This stresses the need for compulsory legislation for helmet use with face-guards for bicyclists and motorcyclists. It is important to take measures to alert the public regarding the severity of injuries likely to occur in bicycle- and motorcycle-related accidents and ways to prevent them.

85. G. P. Kamatou, I. Vermaak and A. M. Viljoen. "Eugenol--from the remote Maluku Islands to the international market place: a review of a remarkable and versatile molecule." Molecules 17(6): 6953-81

Eugenol is a major volatile constituent of clove essential oil obtained through hydro-distillation of mainly *Eugenia caryophyllata* (= *Syzygium aromaticum*) buds and leaves. It is a remarkably versatile molecule incorporated as a functional ingredient in numerous products and has found application in the pharmaceutical, agricultural, fragrance, flavor, cosmetic and various other industries. Its vast range of pharmacological activities has been well-researched and includes antimicrobial, anti-inflammatory, analgesic, anti-oxidant and anticancer activities, amongst others. In addition, it is widely used in agricultural applications to protect foods from micro-organisms during storage, which might have an effect on human health, and as a pesticide and fumigant. As a functional ingredient, it is included in many dental preparations and it has also been shown to enhance skin permeation of various drugs. Eugenol is considered safe as a food additive but due to the wide range of different applications, extensive use and availability of clove oil, it is pertinent to discuss the general toxicity with special reference to contact dermatitis. This review summarizes the pharmacological, agricultural and other applications of eugenol with specific emphasis on mechanism of action as well as toxicity data.

86. M. T. Kato and M. A. Buzalaf. "Iron supplementation reduces the erosive potential of a cola drink on enamel and dentin in situ." J Appl Oral Sci 20(3): 318-22

Iron has been suggested to reduce the erosive potential of cola drinks in vitro. **OBJECTIVE:** The aim of this study was to evaluate in situ the effect of ferrous sulfate supplementation on the inhibition of the erosion caused by a cola drink. **MATERIAL AND METHODS:** Ten adult volunteers participated in a crossover protocol conducted in two phases of 5 days, separated by a washout period of 7 days. In each phase, they wore palatal devices containing two human enamel and two human dentin blocks. The volunteers immersed the devices for 5 min in 150 mL of cola drink (Coca-Cola™, pH 2.6), containing ferrous sulfate (10 mmol/L) or not (control), 4 times per day. The effect of ferrous sulfate on the inhibition of erosion was evaluated by profilometry (wear). Data were analyzed by paired t tests ($p < 0.05$). **RESULTS:** The mean wear (+/-se) was significantly reduced in the presence of ferrous sulfate, both for enamel (control: 5.8+/-1.0 microm; ferrous sulfate: 2.8+/-0.6 microm) and dentin (control: 4.8+/-0.8 microm; ferrous sulfate: 1.7+/-0.7 microm). **CONCLUSIONS:** The supplementation of cola drinks with ferrous sulfate can be a good alternative for the reduction of their erosive potential. Additional studies should be done to test if lower ferrous sulfate concentrations can also have a protective effect as well as the combination of ferrous sulfate with other ions.

- 87. C. R. Katz. "Integrated approach to outpatient dental treatment of a patient with cerebral palsy: a case report." *Spec Care Dentist* 32(5): 210-7**
 The large number of oral manifestations associated with motor disorders in patients with cerebral palsy (CP) makes the dentist an indispensable member of the multidisciplinary team caring for this population. This case report presents an 11-year-old girl with spastic CP who had severe motor impairment, and a description of her care illustrates the importance of integrated care for patients with CP who are receiving outpatient dental treatment. It was determined that the use of adaptations based on knowledge of CP supported the outpatient dental treatment. The integrated approach used during dental treatment enabled the application of knowledge from the fields of dentistry, physical therapy, and speech therapy to provide for a better quality of life for the patient and, consequently, the caregiver through the improvement in the patient's oral and general health.
- 88. A. Khocht, T. Yaskell, M. Janal, B. F. Turner, T. E. Rams, A. D. Haffajee and S. S. Socransky. "Subgingival microbiota in adult Down syndrome periodontitis." *J Periodontal Res* 47(4): 500-7**
BACKGROUND AND OBJECTIVE: The subgingival microbiota in Down syndrome and non-Down syndrome adults receiving periodic dental care was examined for 40 bacterial species using checkerboard DNA-DNA hybridization and the results were related to clinical periodontal attachment loss. **MATERIAL AND METHODS:** A total of 44 Down syndrome, 66 non-Down syndrome mentally retarded and 83 mentally normal adults were clinically evaluated. This involved, for each subject, the removal of subgingival specimens from three interproximal sites on different teeth; all subgingival samples per subject were then pooled and assessed for the presence and levels of 40 bacterial species using species-specific whole-genomic DNA probes and checkerboard DNA-DNA hybridization. Significant group differences in species proportions averaged across subjects were evaluated using the Kruskal-Wallis test, and associations between subgingival species and mean subject attachment loss within Down syndrome and non-Down syndrome subject groups were quantified using Pearson correlation and multiple linear regression analysis. **RESULTS:** Down syndrome subjects exhibited greater attachment loss than non-Down syndrome subjects ($p=0.05$). Most microbial species were present in Down syndrome subjects at levels similar to non-Down syndrome subjects, except for higher proportions of *Selenomonas noxia*, *Propionibacterium acnes*, *Streptococcus gordonii*, *Streptococcus mitis* and *Streptococcus oralis* in Down syndrome subjects compared with non-Down syndrome study subjects, higher proportions of *Treponema socranskii* in Down syndrome subjects compared with non-Down syndrome mentally retarded subjects, and higher proportions of *Streptococcus constellatus* in Down syndrome subjects compared with mentally normal subjects. Down syndrome adults classified with periodontitis revealed higher subgingival levels of *T. socranskii* than Down syndrome subjects with no periodontitis ($p=0.02$). Higher subgingival proportions of *S. constellatus*, *Fusobacterium nucleatum* ssp. *nucleatum*, *S. noxia* and *Prevotella nigrescens* showed significant positive correlations ($r=0.35-0.42$) and higher proportions of *Actinomyces naeslundii* II and *Actinomyces odontolyticus* showed negative correlations ($r=-0.36$ to -0.40), with increasing mean subject attachment loss in Down syndrome adults. **CONCLUSION:** Individuals with Down syndrome show higher levels of some subgingival bacterial species and specific associations between certain subgingival bacterial species and loss of periodontal attachment. These findings are consistent with the notion that certain subgingival bacteria may contribute to the increased level of periodontal disease seen in Down syndrome individuals and raise the question as to the reason for increased colonization in Down syndrome.
- 89. V. S. Kotrashetti, A. D. Kale, S. R. Hallikeremath, D. R. Mane, V. A. P and P. Bhatt. "Intraosseous fibrosarcoma of maxilla in an HIV patient." *Arch Iran Med* 15(1): 59-62**
 Fibrosarcoma is a malignant mesenchymal neoplasm of fibroblasts that rarely affects the oral cavity and can cause local recurrences or metastasis. Fibrosarcomas account for 15% of all soft tissue sarcomas, which represent only 1% of all malignant tumors of the head and neck region. The clinical behavior of the fibrosarcoma is characterized by a high local recurrence rate, and low incidence of loco regional lymph node and/or distant hematogenous metastasis. The etiology for fibrosarcoma has no definite cause but is thought to occur from preexisting lesions or in previously irradiated areas of bone lesions. Immunosuppression associated with HIV infection and acquired immune deficiency syndrome (AIDS) has been consistently linked to various cancers, including Kaposi's sarcoma, non-Hodgkin's lymphoma, and invasive cervical cancer. Rare neoplasms like Hodgkin's disease, anal cancer, leukemia, basal cell carcinoma, and squamous cell carcinoma have also been demonstrated. This paper presents one such a rare incidence of an intraosseous fibrosarcoma occurring in an HIV-positive patient.
- 90. Z. Kudsi, M. H. Dalati, L. Sibai and L. T. Koussayer. "Management of bleeding disorders in the dental practice: managing patients on anticoagulants." *Dent Update* 3(5): 358-60, 363**
 Patients with bleeding disorders pose a challenge for dentists. Most of these conditions can be safely treated in the general dental practice. Patients who are on anticoagulants represent a large group of bleeding disorders. This article reviews the latest evidence in regard to managing those patients. Most of the articles reviewed seem to agree on the negligible risk of modification or interruption of oral anticoagulants when performing most dental treatments because a decreased risk of excessive bleeding might be associated with an increased risk of thrombo-embolic complications. However, extensive pre-operative assessment is essential to reduce the risk of serious complications. Clinical Relevance: Patients with bleeding

disorders pose a challenge for dentists. Adequate understanding of the underlying medical condition is essential to reduce the risk of dangerous complications.

91. **E. Kwoni, S. Choi, Y. Cheong, K. H. Park and H. K. Park. “Scanning electron microscopy study of the effect of the brushing time on the human tooth dentin after exposure to acidic softdrinks.”** *J Nanosci Nanotechnol* 12(7): 5199-204
 Scanning electron microscopy (SEM) was used to examine the abrasive and erosive potential of the brushing time on the dentin surface eroded by acidic soft drinks to suggest an optimized toothbrushing start time after the consumption of cola (pH 2.52) in children. Thirty-six non-cariou primary central incisors were assigned to 12 experimental groups (n = 3) based on the erosive and abrasive treatment protocols. Cola exposure was used as the erosive treatment. Three brushing durations (5, 15, and 30 sec) and four brushing start times (immediately, 30 min, 60 min, and 120 min) after an erosive pre-treatment were used for the abrasive treatment. Toothbrushing after exposure to acidic soft drinks led to an increase in the open-tubule fraction and microstructural changes. Toothbrushing immediately after the erosive pre-treatment showed the largest abrasive and erosive potential on the dentin whereas that 60 and 120 min after the pre-treatment showed the least abrasive and erosive potential on the dentin. Toothbrushing for both 60 and 120 min after the pre-treatment showed similar erosive and abrasive potentials on the dentin. The brushing duration showed no effect on the erosive and abrasive potential on the dentin. Therefore, to achieve the desired tooth surface cleaning and less surface lesion on the dentin surface, toothbrushing should be performed at least 1 hour after cola consumption. Three-minute brushing after cola consumption is sufficient to prevent dental lesions, and prolonged brushing can irritate the gingival tissues.

92. **E. Lalla and I. B. Lamster. “Assessment and management of patients with diabetes mellitus in the dental office.”** *Dent Clin North Am* 56(4): 819-29
 Diabetes mellitus is a serious chronic disease that affects many dental patients. Dental professionals have the potential and responsibility to assume an active role in the early identification, assessment, and management of their patients who present with or are at risk of developing diabetes. Close maintenance, meticulous monitoring of individual patient needs, and close collaboration with other health care professionals involved in the care will enable better control of the oral complications of diabetes and contribute to the better management of the patient's overall health status.

93. **L. LaPointe, M. Guelmann and R. Primosch. “State regulations governing oral sedation in dental practice.”** *Pediatr Dent* 34(7): 489-92
 PURPOSE: The purpose of this study was to survey 50 state dental boards concerning their regulations governing the practice of moderate sedation administered by the oral route. METHODS: An online search was conducted to review each state's dental practice act. When interpretation of the information provided online was difficult, clarification was achieved by contacting that state board directly by telephone interview. To assist in further interpretation, the ADA's Statutory Guidelines for Conscious Sedation Permit were reviewed for comparison with the data collected. RESULTS: Forty-one states required a permit to administer moderate sedation by the oral route. Every state except Kansas required minimum didactic educational requirements for permit issuance. Every state required monitoring of the patient throughout the procedure and during recovery until discharge. In addition, all states expected the practitioner and clinical staff to be adequately trained to manage a sedation-related emergency. CONCLUSIONS: State dental boards have significantly increased regulation of oral sedation over the past 10 years, but vary widely in their permit requirements for issuance. This dis-harmony among the states should foster the national desire to develop a more unified approach in regulating oral sedation.

94. **H. Li, T. Takeshita, M. Furuta, M. Tomioka, Y. Shibata, Y. Shimazaki, K. Makimura and Y. Yamashita. “Molecular characterization of fungal populations on the tongue dorsum of institutionalized elderly adults.”** *Oral Dis* 18(8): 771-7
 OBJECTIVES: To characterize the global composition of oral fungal populations in frail elderly adults and to investigate the relationship with their health status. MATERIALS AND METHODS: We investigated the fungal populations on the tongue dorsum in 291 institutionalized elderly adults by molecular PCR-based techniques using internal transcribed spacer regions of nuclear ribosomal DNA. RESULTS: Quantitative PCR analysis showed that fungi were present on the tongue dorsum of 128 subjects at $\geq 10^4$ CFU per sample, and 35 of them exceeded 10^5 CFU per sample. Length heterogeneity-PCR analysis and nucleotide sequence determinations showed that *Candida albicans* was most frequently detected in those subjects with fungi at $\geq 10^4$ CFU per sample (105 subjects), followed by *Candida dubliniensis* (78), *Malassezia restricta* (57), and *Candida tropicalis* (45). Statistical analysis revealed that those subjects with $\geq 10^5$ CFU of fungi other than *C. albicans* per sample had an increased risk of fever (≥ 7 febrile days per 12 months) compared with subjects with $< 10^5$ CFU per sample, after adjustment for other fever-associated confounding factors. CONCLUSIONS: These data demonstrate that the oral cavity of the elderly is inhabited by a diverse array of fungi not limited to typical *Candida* species and they suggest that the diversity in distribution is associated with health status.

95. **P. Lisowska and B. Daly. “Vagus nerve stimulation therapy (VNST) in epilepsy - implications for dental practice.”** *Br Dent* 212(2): 69-72
 Epilepsy is a chronic condition which affects about 1% of the population. It is important that the dental team is aware of the management of epileptic seizures and epileptic syndromes including recent advances in seizure management. As people with

epilepsy often get a warning aura before seizures begin, the management of the condition has increasingly involved measures to prevent the seizure, once the aura has begun. Vagus nerve stimulation therapy (VNST) in epilepsy involves the use of an implantable electronic device and is being increasingly used in the UK to control severe treatment resistant epilepsy. As a result, more patients will be presented to clinicians in the primary healthcare setting and hospital services with these devices in place. Members of the dental team need to understand the principles of epilepsy control, how VNST is used in the management of intractable epilepsy, how the VNST system operates and the implications of VNST use for dental practice including medical devices, interactions and safety features.

96. **M. Lordkipanidze. "Platelet turnover in atherothrombotic disease."** *Curr Pharm Des* 18(33): 5328-43
Platelets play a pivotal role in primary hemostasis where their rapid response to vascular injury prevents excessive bleeding. To accomplish this, platelets are enriched in membrane receptors and cytoplasmic enzymes with often redundant and self-amplifying functions leading to platelet activation, release into the bloodstream of hemostatically active compounds and culminating with thrombus formation. However, the same process in the pathological state of atherosclerosis can lead to thrombotic complications such as an acute coronary syndrome or stroke. The role of platelets in this process is more extensive than previously believed. Several lines of evidence suggest that platelets contribute not only to the acute thrombotic events in atherosclerosis, but also to disease initiation and progression. This review focuses on the role of platelet heterogeneity and turnover in atherothrombotic disease. Specifically, this article covers (a) the regulation of platelet formation; (b) the role of the heterogeneity of platelets in atherothrombotic diseases; (c) the disease-modifying effect of platelets on the development of atherosclerosis; and (d) the modifying effect of atherosclerotic disease on platelet production and function; (e) the platelet indices influencing platelet responsiveness to antiplatelet therapies; and finally (f) the potential novel therapeutic modalities that could be applied in atherothrombosis.
97. **D. P. Lu, P. S. Wu and W. I. Lu. "Sedating the apprehensive debilitated patients for dental procedures by combining parenteral sedation and hypnosis with supplemental acupuncture therapy."** *Acupunct Electrother Res* 37(1): 49-62
Treating apprehensive debilitated patients (i.e. geriatric patients, patients with cardiac, pulmonary, kidney, or liver diseases, and those with other severe systemic conditions) for dental procedures can cause unexpected medical complications such as cardiac arrest, stroke, asthma or shock, etc. Due to diminishing functional capacities of their organs, sedating those patients with sedative drugs in normal regular dosage could increase the risk of adverse events for this group of patients and can also increase the risk of liability for the clinician. The authors treated 34 apprehensive dental patients with a combination technique using parenteral sedation and hypnosis together with acupuncture. We used Bi-Digital O-Ring Test (BDORT) to select the compatible sedative drugs and to individualize the dosage suitable to the patient's medical condition. Oftentimes, BDORT predetermined dosage amounts to a fraction of regular dosage that is normally recommended by manufacturer for regular healthy patients. Such a reduced dosage, though benign to patient, may be insufficient to render a patient to the sedation level for dental treatment. Nevertheless, hypnosis with acupuncture can be applied to potentiate the therapeutic effect of parenteral sedation, thereby reducing the amount of sedative agents required to alleviate patient anxiety. The results indicated that hypnosis with acupuncture and BDORT could effectively allow the reduction of the sedative dosage and may beneficially provide a safe and comfortable situation for the debilitated patients to receive the necessary treatment.
98. **C. Mac Giolla Phadraig, S. Guerin and J. Nunn. "Train the trainer? A randomized controlled trial of a multi-tiered oral health education program in community-based residential services for adults with intellectual disability."** *Community Dent Oral Epidemiol* 41(2): 182-92
OBJECTIVES: To assess the impact of a multi-tiered oral health education program on care staff caring for people with intellectual disability (ID). METHODS: Postal questionnaires were sent to all care staff of a community-based residential care service for adults, randomly assigned to control and intervention groups. A specifically developed training program was delivered to residential staff nominees, who then trained all staff within the intervention group. The control group received no training. Post-test questionnaires were sent to both groups. Paired-samples t-test was used to compare oral health-related knowledge (K) and behavior, attitude and self-efficacy (BAS) scores. RESULTS: Of the initial 219 respondents, 154 (response rate between 40% and 35.8%, with attrition rate of 29.7% from baseline to repeat) returned completed questionnaires at post-test (M=8.5 months, range=6.5-11 months). Control and intervention groups were comparable for general training, employment and demographic variables. In the intervention group, mean Knowledge Index score rose from K=7.2 to K=7.9 (P<0.001) and mean BAS scale score rose from BAS=4.7 to BAS=5.4 (P<0.001). There was no statistically significant increase in mean scores from test (K=7.0, BAS=4.7) to post-test (K=7.2, BAS=4.9) for the control group. CONCLUSIONS: Mean scores regarding knowledge, attitude, self-efficacy and reported behavior increased significantly at 8.5 months in staff where training was provided. The results indicate that a multi-tiered training program improved knowledge, attitude, self-efficacy and reported behavior amongst staff caring for people with ID.
99. **V. Macho, M. Palha, A. P. Macedo, O. Ribeiro and C. Andrade. "Comparative study between dental caries prevalence of Down syndrome children and their siblings."** *Spec Care Dentist*: 33(1): 2-7
The purpose of this epidemiological study was to determine the differences in the prevalence of caries between individuals with Down syndrome (DS) and their siblings. A sibling-matched, population-based and cross-sectional survey was performed.

This study involved 138 (62%) children with DS and 86 (38%) siblings, aged 2-26. The children were compared in different subgroups: [2, 6], [6, 12], and [13, 26]. Data was gathered through the use of a complete questionnaire and clinical observation. Data analysis was performed by using SPSS(R) v.18.0 software with any p value <.05 considered as significant. The DS group presented a significantly higher percentage of children within the caries-free group: 72% versus 46% of the siblings group (p < .001). In the age gap [2, 6] the median value of DMFT was the same in both groups (p = .918). In the age gap [6, 12] the median value of DMFT in the DS group was 0 and in the siblings group was 1 (p = .004). In the age gap [13, 26] the median value of DMFT in the DS group was 0, whereas in the siblings group the median value was 3, which constitutes a significantly high difference (p = .003). The results of this study suggest that Portuguese children with DS have lower caries prevalence than their siblings.

- 100. S. Maeda, Y. Tomoyasu, H. Higuchi, T. Mori, M. Egusa and T. Miyawaki. "Midazolam is associated with delay in recovery and agitation after ambulatory general anesthesia for dental treatment in patients with disabilities: a retrospective cohort study." J Oral Maxillofac Surg 70(6): 1315-20**

PURPOSE: Some patients with intellectual disabilities (IDs) who undergo total intravenous anesthesia (TIVA) have complications associated with the anesthesia such as prolonged recovery. The purposes of this study were to estimate the frequency of TIVA complications among patients with IDs and to identify factors associated with TIVA complications. **MATERIALS AND METHODS:** This study was designed as a retrospective cohort study. Study samples were selected from the clinical records of patients with IDs who underwent ambulatory general anesthesia in a special dental clinic at the Okayama University Hospital, Okayama, Japan. Predictor variables were patient background, anesthesia-related variables, and dental treatment. Outcome variables were delayed recovery and the complication of agitation. Factors affecting delayed recovery and complications were examined with multivariable analysis. **RESULTS:** We enrolled 106 cases (81 male and 25 female patients) in this study. The mean age was 23.9 years. Serious complications were not observed in any cases. The amount of intravenous midazolam was an independent determinant of delayed recovery. Oral midazolam contributed to delayed recovery, although it is very useful for induction in patients with a high level of fear. Oral midazolam and a younger age were independent predictors of agitation. **CONCLUSIONS:** Intravenous midazolam may not have an advantage in ambulatory general anesthesia. Oral midazolam contributes to delayed recovery and is an independent predictor of agitation.

- 101. L. Marks, N. Adler, H. Blom-Reukers, J. H. Elhorst, A. Kraaijenhagen-Oostinga and J. Vanobbergen. "Ethics on the dental treatment of patients with mental disability: results of a Netherlands - Belgium survey." J Forensic Odontostomatol 30 Suppl (1): 21-8**

This study evaluates several ethical dilemmas of by dental practitioners treating persons with mental disabilities (PMD) by dentists in the Netherlands and Belgium. Ethical dental care for PMD is a hot topic. Worldwide different treatment strategies are used in the dental treatment of this patient group. In addition, cultural aspect seems to play an important role in the choices made. The latter can explain the difficulty in creating European and worldwide guidelines on this issue. A questionnaire was sent to dental practitioners interested in treating PMD persons both in the Netherlands and in Belgium including questions on the use of behavior management techniques, use and attitude towards sedation and physical fixation and the cooperation with other health care personal. Behavior management techniques and sedation are frequently used. Dentist of the Netherlands and Belgium in general reject the restraint of PMD persons. However, limited use of manual restraint in accordance with the caregivers and the close surrounding of the patient seems to be accepted. Dental practitioners are sometimes confronted with an emotional dilemma in treating PMD and the majority feels that it is a continuous challenge to obtain optimal result of the dental treatment.

- 102. G. Mayrink, E. P. Figueiredo, F. R. Sato and R. W. Moreira. Cervico-facial pain associated with Eagle's syndrome misdiagnosed as trigeminal neuralgia. Oral Maxillofac Surg 16(2): 207-10**

BACKGROUND: Eagle's syndrome is characterized by the symptoms of recurrent throat pain, pharyngeal foreign body sensation, dysphagia, referred otalgia, and neck pain. The treatment for Eagle's syndrome can be pharmacologically, surgically, or both. The surgical management consists of two major procedures: the trans-oral approach or the extraoral-cervical approach. **CASE REPORT:** A 64-year-old patient with a severe cervical pain on the left side was evaluated with no defined diagnosis. During physical examination, an elongated styloid process could be palpated and with CT scan image, the Eagle's syndrome diagnosis was done. The patient was successfully submitted to surgical resection of the elongated styloid process on the left side by an extraoral-cervical approach. After 6 months follow-up, the patient referred no symptom after the surgical treatment. **CONCLUSION:** The extraoral/cervical approach is a safe alternative that achieves adequate treatment of Eagle's syndrome.

- 103. M. Melbye, C. E. Huebner, D. L. Chi, H. Hinderberger and P. Milgrom. "A first look: determinants of dental care for children in foster care." Spec Care Dentist 33(1): 13-9**

PURPOSE: This hypothesis-generating study sought to identify potential determinants of dental care use and oral health among children living in foster care. **METHOD:** Using a grounded theory approach, fourteen key informant interviews were conducted among health and social services professionals experienced with children in foster care and families in western Washington State. **RESULTS:** The identified potential determinants of oral health and dental use among children living in foster care included: (1) linguistic and cultural barriers; (2) lack of dentists willing to accept children's Medicaid dental insurance; (3) lack of

resources available to case workers (i.e., large caseload burden) (4) lack of federal funding for specialized dental care; (5) lack of systematic health record-keeping; (6) child transience, leading to the lack of a dental home; (8) foster parents' competing needs; (7) child behavior problems; and (9) lack of dental "buy in" from adolescents. CONCLUSION: Additional studies are needed to determine whether children living in foster care achieve oral health, and the extent of their unmet dental need.

- 104. R. N. Moreira, C. E. Alcantara, I. Mota-Veloso, S. A. Marinho, M. L. Ramos-Jorge and F. Oliveira-Ferreira. "Does intellectual disability affect the development of dental caries in patients with cerebral palsy?"** *Res Dev Disabil* 33(5): 1503-7
- The aim of this study was to evaluate if the severity of intellectual disability is a factor that affects the development of dental cavities in patients with cerebral palsy. This cross-sectional study was conducted on 165 individuals who were selected from a physical rehabilitation center, a special public school and a regular public school. Of these, 76 individuals had been diagnosed with spastic cerebral palsy and 89 had no neurological impairment. The subjects were matched based on age and gender and selected randomly by lottery. All patients were examined to determine the number of dental cavities, and tested for their intellectual functioning (Raven Test) and motor abilities. The study showed that children with CP who presented with intellectual disabilities had a larger number of dental cavities than children with CP without intellectual disabilities. Considering intellectual functioning and motor impairment in the multivariate logistic regression, only intellectual functioning was found to have a significant effect on the development of dental cavities. These results suggest that intellectual disability can be considered a contributing factor for the development of dental caries in patients with cerebral palsy.
- 105. J. P. Morgan, P. M. Minihan, P. C. Stark, M. D. Finkelman, K. E. Yantsides, A. Park, C. J. Nobles, W. Tao and A. Must. "The oral health status of 4,732 adults with intellectual and developmental disabilities."** *J Am Dent Assoc* 143(8): 838-46
- BACKGROUND: Two reports by the U.S. surgeon general noted the disproportionate impact of oral disease on and lack of oral health information regarding people with disabilities. METHODS: In this retrospective study, the authors used clinical and demographic data (from April 1, 2009, through March 31, 2010) from electronic dental records of 4,732 adults with intellectual and developmental disabilities (IDDs) who were receiving dental care through a state-supported system of dental clinics. The authors used these data to investigate the oral health status of, and associated risk factors for, adults with IDD. RESULTS: The prevalence of untreated caries in the study population was 32.2 percent, of periodontitis was 80.3 percent and of edentulism was 10.9 percent. The mean (standard deviation) numbers of decayed teeth; missing teeth; and decayed, missing and filled teeth were 1.0 (2.2), 6.7 (7.0) and 13.9 (7.7), respectively. CONCLUSIONS: Management of oral health presents significant challenges in adults with IDD. Age, ability to cooperate with dental treatment and type of residence are important considerations in identifying preventive strategies. CLINICAL IMPLICATIONS: The study population demonstrated a high burden of dental disease. Further research is required to identify effective interventions to improve oral health in adults with IDD.
- 106. M. Moskovitz, R. Birenboim, H. Katz-Sagi, Z. Perles and D. Averbuch. "A brain abscess of probable odontogenic origin in a child with cyanotic heart disease."** *Pediatr Dent* 34(5): 403-6
- The purpose of the present report was to present a rare case of a brain abscess in a child with heterotaxy syndrome, severe cardiac anomalies, and extensive dental caries. The pathogen was *Streptococcus intermedius* isolated from the cerebrospinal fluid. The source of the pathogen was probably an infection of a primary molar with a dento-alveolar abscess involving the bud of the permanent successor. After a long course of antibiotic regimens followed by a craniotomy with abscess drainage, a shunt, and comprehensive dental treatment, the patient was discharged from the hospital without any neurological sequel. At home, she completed an additional 3 months of oral antibiotics. This is the only known documented case of a toddler with a brain abscess of probable odontogenic origin without previous dental intervention. It emphasizes the importance of collaboration between cardiologists and pediatric dentists, especially in referring children with congenital heart defects for early dental checkups.
- 107. S. Nagpal, A. B. Acharya and S. L. Thakur. "Periodontal disease and anemias associated with Crohn's disease. A case report."** *N Y State Dent J* 78(2): 47-50
- Crohn's disease (CD) is an inflammatory bowel disease with oral findings, including periodontal manifestations. Anemias, such as iron deficiency and anemia of chronic disease (ACD), are the most common hematologic complications of CD. Periodontitis has systemic effects, and may tend toward anemia, which can be explained by depressed erythropoiesis. In the report presented here, the authors review a case of Crohn's disease diagnosed 10 years previous to the patient presenting with a changing anemic profile and periodontal disease. A discussion of patient and disease management is included.
- 108. M. G. O'Callaghan. "Human trafficking and the dental professional."** *J Am Dent Assoc* 143(5): 498-504
- BACKGROUND: "Human trafficking" is a term for a modern form of slavery. It is a criminal human rights violation and a significant health issue. Dental professionals can assist in recognizing victims of trafficking. METHODS: The author conducted a PubMed search of the English-language literature through May 2011, which yielded no articles meeting the search criteria "dentistry" and "human trafficking prostitution." Given these results, the author reviewed articles published in medical journals, reports from both governmental and nongovernmental agencies and lay literature. RESULTS: The author examines the present state of human trafficking and provides information--including specific questions to ask--to help dentists identify victims. In addition, the author suggests means of notifying authorities and assisting trafficking victims. He also examines the health care

needs of these patients. **CONCLUSION:** Human trafficking is a global problem, with thousands of victims in the United States, including many women and children. Dentists have a responsibility to act for the benefit of others, which includes detecting signs of abuse and neglect. **CLINICAL IMPLICATIONS:** Dental professionals are on the front lines with respect to encountering and identifying potential victims who seek dental treatment. Dentists can combat human trafficking by becoming informed and by maintaining vigilance in their practices.

- 109. O. E. Ogle and M. B. Hertz. "Anxiety control in the dental patient." *Dent Clin North Am* 56(1): 1-16, vii**
 Oral sedation with benzodiazepines and anxiolysis with nitrous oxide are 2 effective methods to help alleviate anxiety and fear of dental procedures. Many patients would prefer to have their dentistry performed with sedation if it were offered to them. This article presents a detailed discussion on minimal sedation that should give the reader a good understanding of this valuable aspect of clinical care.
- 110. O. E. Ogle and G. Mahjoubi. "Local anesthesia: agents, techniques, and complications." *Dent Clin North Am* 56(1): 133-48, ix**
 This article outlines the different classes of local anesthetics available for dental procedures. It also gives an overview of the mechanism of action and metabolism of each different class of local anesthetic. Furthermore, it discusses indications and contraindications of each local anesthetic and the proper dosage of each. The techniques for the administration of local anesthetics with the relevant anatomy are explained. An overview is given of the possible complications that can occur because of local anesthetic use and their possible treatment options.
- 111. E. Olerud, M. L. Hagman-Gustafsson and P. Gabre. "Oral status, oral hygiene, and patient satisfaction in the elderly with dental implants dependent on substantial needs of care for daily living." *Spec Care Dentist* 32(2): 49-54**
 Using osseo-integrated implants to replace teeth is a routine procedure today. This study investigated oral status, oral hygiene habits, and patient satisfaction in elderly with dental implants who were dependent on substantial support for daily living. Twenty-six persons over the age of 65 who were dependent on supportive care were examined. Data collected included the number of teeth and implants, plaque scores, bleeding on probing, and oral hygiene habits. Self-perceived knowledge about managing their implants and satisfaction with the implants was recorded. Subjects had a total of 148 natural teeth and 144 implants. Only a few signs of oral disease were found and the tissues around implants were healthier than around natural teeth. No correlations between oral hygiene habits and plaque scores or bleeding were found. A majority of the subjects were satisfied with their implants. Dental implants have satisfactory function even in individuals who are elderly and have substantial needs for supportive care.
- 112. M. A. Ommerborn, M. Giraki, C. Schneider, L. M. Fuck, J. Handschel, M. Franz, W. Hans-Michael Raab and R. Schafer. "Effects of sleep bruxism on functional and occlusal parameters: a prospective controlled investigation." *Int J Oral Sci* 4(3): 141-5**
 This study was conducted to verify the results of a preceding retrospective pilot study by means of a prospective controlled investigation including a larger sample size. Therefore, the aim of this clinical investigation was to analyze the relationship between sleep bruxism and several functional and occlusal parameters. The null hypothesis of this study was that there would be no differences among sleep bruxism subjects and non-sleep bruxism controls regarding several functional and occlusal parameters. Fifty-eight sleep bruxism subjects and 31 controls participated in this study. The diagnosis sleep bruxism was based on clinical criteria of the American Academy of Sleep Medicine. Sixteen functional and occlusal parameters were recorded clinically or from dental study casts. Similar to the recently published retrospective pilot study, with a mean slide of 0.77 mm (s.d., 0.69 mm) in the sleep bruxism group and a mean slide of 0.4 mm (s.d., 0.57 mm) in the control group, the evaluation of the mean comparison between the two groups demonstrated a larger slide from centric occlusion to maximum intercuspation in sleep bruxism subjects (Mann-Whitney U-test; P=0.008). However, following Bonferroni adjustment, none of the 16 occlusal and functional variables differed significantly between the sleep bruxism subjects and the non-sleep bruxism controls. The present study shows that the occlusal and functional parameters evaluated do not differ between sleep bruxism subjects and non-sleep bruxism subjects. However, as the literature reveals a possible association between bruxism and certain subgroups of temporomandibular disorders, it appears advisable to incorporate the individual adaptive capacity of the stomatognathic system into future investigations.
- 113. S. Ono, Y. Suzuki, M. Shindo, T. Endo, N. Fukui, T. Sugai and T. Someya. "Improvement of tardive dyskinesia and dystonia associated with aripiprazole following a switch to quetiapine: case report and review of the literature." *J Clin Pharm Ther* 37(3): 370-2**
WHAT IS KNOWN AND OBJECTIVE: Aripiprazole has a low risk of extrapyramidal symptoms. Switching to aripiprazole has been reported to improve tardive dyskinesia caused by other medications. The authors report a case and review previous reports of dystonia and dyskinesia associated with aripiprazole. **CASE SUMMARY:** We present a case of a 22-year-old man with schizophrenia who experienced dyskinesia and dystonia associated with aripiprazole. Switching from olanzapine to aripiprazole resulted in worsening dyskinesia and new onset of dystonia. The patient's dyskinesia and dystonia improved after switching from aripiprazole to quetiapine therapy. **WHAT IS NEW AND CONCLUSION:** There were several previous case reports on

dyskinesia and dystonia associated with aripiprazole medication. The risk factors for tardive dyskinesia include older age and female sex. However, our case was a male patient who was younger compared with the previous cases and so should have been less at risk for dyskinesia in comparison with the previous cases. The effects of aripiprazole can include tardive movement disorders. Dyskinesia, dystonia and psychotic symptoms were improved with relatively small dose of quetiapine in this case. Whether some second-generation antipsychotics are more effective than others in the treatment of tardive dyskinesia remains unclear.

- 114. S. M. Osailan, R. Pramanik, P. Shirlaw, G. B. Proctor and S. J. Challacombe. "Clinical assessment of oral dryness: development of a scoring system related to salivary flow and mucosal wetness." *Oral Surg Oral Med Oral Pathol Oral Radiol* 114(5): 597-603**

OBJECTIVE: The aim of this study was to develop a clinical oral dryness score (CODS) for routine use in assessment of xerostomia patients and determine its relationship with salivary flow rates and mucosal wetness. **STUDY DESIGN:** CODS was determined from 10 features of oral dryness, each scoring as 1 point for a total score of 0-10. CODS, salivary flow rates, and mucosal wetness were measured in 100 patients and 50 healthy control subjects. The reproducibility of CODS was 0.89-0.96 (intraclass correlation coefficient). **RESULTS:** The mean +/- SD CODS in patients was 6.0 +/- 1.6 compared with 1.0 +/- 0.9 for control subjects ($P < .001$), and the highest mean value was in the primary Sjogren syndrome group. There was a general inverse relationship in patients between mean CODS and salivary flow rate ($P < .01$) and mean CODS and mucosal wetness ($P < .01$). **CONCLUSIONS:** The CODS was found to be useful, easy to use, and reliable for routine assessment of the severity of dry mouth.

- 115. A. Pai, S. Prasad and S. Dyasanoor. "Acute leukemias: a dentist's perspective." *Minerva Stomatol* 61(5): 233-8**

Oral cavity reflects the health status of an individual. Many systemic diseases have signs and symptoms that manifest in the oral cavity, which in most of the cases precede the systemic manifestations. These array of diseases also include acute leukemias which present as gingival hyperplasia as the most consistent symptom seeking dental consultation that can be easily confused with many other benign conditions that present as gingival enlargements. One such rare case of adult acute lymphoblastic leukemia is presented in this article.

- 116. P. M. Patil and S. P. Patil. "Is clonidine an adequate alternative to epinephrine as a vasoconstrictor in patients with hypertension?" *J Oral Maxillofac Surg* 70(2): 257-62**

PURPOSE: To evaluate the safety and efficacy of an admixture of lidocaine with clonidine with regard to the anesthetic abilities, hemodynamic parameters, and postoperative pain control and to compare the results with those obtained with a lidocaine-epinephrine solution. **MATERIALS AND METHODS:** A total of 50 patients with poorly controlled, moderate hypertension (American Society of Anesthesiologists class II) who presented for uncomplicated upper third molar extraction were included in a double-blind study. The time of onset of action, duration, and intensity of anesthesia and the vasoconstrictor properties were evaluated. The hemodynamic changes (ie, systolic blood pressure, diastolic blood pressure, mean arterial pressure, heart rate, ST-segment depression of 1 mm or greater, and cardiac arrhythmias) were recorded. The presence of postoperative pain and analgesic requirements were also compared. The results were analyzed using an unpaired, type sample equal-variance t-test with the Bonferroni correction. **RESULTS:** Of the 50 patients with hypertension (American Society of Anesthesiologists class II), 25 received 2 mL of 2% lidocaine with clonidine (15 µg/mL) and 25 received lidocaine with epinephrine (12.5 µg/mL). There were no significant differences between the 2 agents with regard to the time of onset of action, duration or intensity of anesthesia, or the vasoconstrictor properties. The clonidine group showed better hemodynamic parameters compared with the epinephrine group. The clonidine group showed significantly lesser postoperative pain and, therefore, had lesser analgesic consumption. **CONCLUSIONS:** Clonidine could be a useful and safe alternative to epinephrine for intraoral block anesthesia with lidocaine in patients with hypertension and American Society of Anesthesiologists class II.

- 117. B. Peretz, A. Spierer, S. Spierer and M. Rakocz. "Dental treatment of patients with systemic diseases compared to patients with developmental disabilities under general anesthesia." *Spec Care Dentist*: 32(1): 21-5**

The medical and dental records were examined for 46 patients with systemic diseases (SD) and 75 patients with developmental disabilities (DD) aged 2-20 years, who had received dental treatment under general anesthesia (GA). Age, gender, decayed missing and filled teeth (dmft/DMFT), dental procedures, duration of GA, and post-treatment hospitalization were recorded. Before treatment, dental disease in the primary teeth was significantly higher among the group with SD ($p = 0.04$). In the permanent teeth, dental disease was higher among the group with DD, though not significantly. More teeth were restored, ($p = 0.015$) and total dmft ($p = 0.043$) was significantly higher among subjects with SD. In the permanent teeth, more extracted and more restored teeth and higher DMFT were noted among subjects with DD, though not significantly. Only pulpectomies were significantly more prevalent among those with DD ($p = 0.038$). Six subjects needed hospitalization due to their diseases after GA.

- 118. M. C. Ravenel, C. F. Salinas, N. M. Marlow, E. H. Slate, Z. P. Evans and P. M. Miller. "Methamphetamine abuse and oral health: a pilot study of "meth mouth". *Quintessence Int* : 43(3): 229-37**

Abuse of methamphetamine (meth), a potent central nervous system stimulant, has been associated with significant dental disease. Current descriptions of "meth mouth" are limited in their scope and fail to illuminate the potential pathogenic mechanisms of meth for oral disease. The purpose of this pilot study was to characterize the oral health of subjects with a history of meth abuse as compared to nonabusing control subjects. A total of 28 meth abusers and 16 control subjects were enrolled. Interviews and surveys regarding meth abuse, dental history, oral hygiene, and diet were collected. A comprehensive oral cavity examination including salivary characterization was completed. We observed significantly higher rates of decayed surfaces, missing teeth, tooth wear, plaque, and calculus among meth abusers. No significant difference in salivary flow rates were noted, yet results showed significant trends for lower pH and decreased buffering capacity. These findings suggest that salivary quality may play a more important role in meth mouth than previously considered. Salivary analysis may be useful when managing a dental patient with history of methamphetamine abuse.

- 119. A. Rodriguez-Caballero, D. Torres-Lagares, R. M. Yanez-Vico, J. L. Gutierrez-Perez and G. Machuca-Portillo. "Assessment of orofacial characteristics and oral pathology associated with cri-du-chat syndrome." *Oral Dis* 18(2): 191-7**
OBJECTIVE: To obtain a deeper insight into the difficulties individuals with cri-du-chat syndrome experience by means of the analysis of the most common features and oral pathology observed in the subjects enrolled in the study. **SUBJECTS AND METHODS:** Intra-oral and extra-oral features of a total of 33 patients with cri-du-chat syndrome (the larger sample so far analyzed) through their clinical and photographic examination. Models, orthopantomographies, and telerradiographies have been collected to establish a pattern as accurate as possible of the oral pathology associated with these patients. **RESULTS:** The present descriptive study shows that patients with cri-du-chat syndrome present with a series of orofacial features such as mandibular retrognathism, high palate, and variable malocclusion, more commonly anterior open-bite. Most patients also present with perioral muscle relaxation with labial incompetence and short philtrum. As regards oral pathology, these patients suffer dental erosions provoked by gastroesophageal reflux and attritions because of intense day-and-night bruxism. **CONCLUSION:** The odontologists' familiarity with the orofacial pathology associated with cri-du-chat syndrome and with the specific needs such disorder conveys should improve the quality of the buccal-dental treatment these professionals may offer to these patients.
- 120. K. Samsara, D. Singh, V. Hanna and F. R. Karjodkar. "Risperidone-induced rabbit syndrome: an unusual movement disorder." *N Y State Dent J* 78(5): 44-6**
 Rabbit syndrome is an antipsychotic-induced rhythmic motion of the mouth and lips, resembling the chewing motion of a rabbit. The motion consists of vertical movement; the tongue is not involved. The reported prevalence of rabbit syndrome ranges from 2.3% to 4.4% of patients treated with typical antipsychotic drugs. There have been isolated reports of rabbit syndrome in patients treated with atypical antipsychotics. Rabbit syndrome needs to be closely differentiated from tardive dyskinesia, the tongue-involving movement disorder. Treatment of rabbit syndrome is empirical, reflecting poor understanding of this syndrome. The striking aspect of this syndrome is its specificity. The etiology of rabbit syndrome focuses attention on the basal ganglia, which is also implicated in oral dyskinesia. Continuing neuro-physiological research of the basal ganglia probably holds the key to better understanding of this syndrome. The aim of this article is to create awareness of rabbit syndrome and its implications in clinical dentistry.
- 121. P. Subar, E. M. Chavez, J. Miles, A. Wong, P. Glassman and E. Labarre. "Pre- and postdoctoral dental education compared to practice patterns in special care dentistry." *J Dent Educ* 76(12): 1623-8**
 There has been limited research into the impact of pre-doctoral experiences and postdoctoral general dentistry residencies on the practice patterns of dentists in the care of patients with special or complex needs. This study was undertaken to determine if educational experiences with special populations had a relationship to practice patterns after graduation or residency. University of the Pacific alumni who graduated between 1997 and 2007 were surveyed regarding their pre- and postdoctoral dental education and their practice patterns for the care of patients categorized as medically compromised, frail elders, and developmentally disabled. Definitions for each patient category were provided. Alumni were asked about their practice setting and postdoctoral education. Thirty-one percent (n=526) of those surveyed responded. Regression analyses showed respondents not in private practice were more likely to have completed a postdoctoral general dentistry program (Advanced Education in General Dentistry or General Practice Residency) after dental school compared to respondents in private practice (p<0.001). Across all age groups, respondents not in private practice treated significantly more patients with developmental disabilities than those in private practice (p<0.001). Respondents not in private practice treated more medically compromised patients younger than age sixty-five compared to respondents in private practice (p<0.01). Interestingly, those in private practice treated significantly more patients over sixty-five who were also classified as medically compromised (p<0.05). Pacific alumni who completed postdoctoral training in general dentistry were found to practice more often in non-private practice settings. Alumni in non-private practice settings reported treating a higher percentage of medically compromised patients below age sixty-five than their counterparts in a typical private practice. The pre- and postdoctoral experiences of treating special needs populations appear to have a relationship to graduates' practice setting and patient population.

- 122. S. Thikkurissy, K. Glazer, H. Amini, P. S. Casamassimo and R. Rashid. "The comparative morbidities of acute dental pain and acute asthma on quality of life in children." *Pediatr Dent* 34(4): e77-80**
 PURPOSE: The purpose of this prospective cross-section survey study was to examine the comparative burden of acute exacerbations of the two most common chronic illnesses of childhood: acute dental pain and acute asthma. METHODS: All patients came from one of three distinct clinics within Nationwide Children's Hospital, Columbus, Ohio: (1) outpatient dental clinic; (2) urgent medical care unit; or (3) emergency department. Caregivers were asked information about their child's condition and the impact on their daily function. RESULTS: A total of 112 parent-child dyads were included in this study. Children were significantly more likely to be under the care of a physician for asthma than a dentist for caries ($P < .001$). More caregivers worried about their child's overall health due to dental caries than asthma-related symptoms ($P < .001$). Two thirds of children had pain due to dental caries, which kept them from sleeping; 45% were prevented from playing; 45% were prevented from going to school; and 68% from eating in the preceding week. CONCLUSION: Acute dental disease had a comparative and, in some aspects, greater impact on a child's quality of life than acute asthma.
- 123. P. S. Thomas, G. S. Babu, R. L. Anusha and S. Shetty. "Oral malignant melanoma--an unusual presentation." *Gerodontology* 29(2): e1241-3**
 Malignant melanoma is the least common but most deadly of all primary skin cancers. Oral malignant melanoma is a rare aggressive neoplasm usually seen in middle aged persons. This malignancy is more frequently seen on the hard palate and gingiva. Oral melanomas are associated with very poor prognosis because of the tendency to metastasize or invade tissues locally more readily than other malignant tumors of the oral cavity especially in the case of a geriatric patient. The surgical approach, combined with the chemotherapy, is the first choice treatment. This report highlights a case report of 71-year-old female patient diagnosed and treated surgically for an oral malignant melanoma of the pedunculated variety affecting the hard palate and gingiva with review of literature.
- 124. B. T. Tingey, S. H. Clark, L. A. Humbert, J. D. Tingey and C. M. Kummet. "Use of intravenous sedation in periodontal practice: a national survey." *J Periodontol* 83(7): 830-5**
 BACKGROUND: In the early 1990s, much of the periodontal profession perceived an upcoming shift in services performed by periodontists as many patients began to expect sedation for periodontal surgery. As a result, in 1993 the American Academy of Periodontology began encouraging postgraduate periodontal programs to train residents in the use of conscious sedation. The purpose of this study is to investigate trends in the training of intravenous (i.v.) sedation in residency and its use in periodontal practice. METHODS: An 18-question survey was mailed to a sample of 1596 active periodontists throughout the United States and Canada. Thirty-seven percent (596) of the surveys were returned. Twenty-two retired periodontists responded and were excluded from the analysis. The data from the remaining 574 surveys were analyzed with a statistical software package. RESULTS: Approximately half (49.8%) of the survey respondents offer i.v. sedation in their practices. Among respondents who completed residency prior to 1996, 42.6% offer i.v. sedation compared with 64.2% of respondents who completed residency in 1996 or later. The number of i.v. sedations performed in residency was moderately correlated with the number of i.v. sedations personally performed in periodontal practice (Spearman $r = 0.5169$, $P < 0.0001$). The largest percentage of periodontists using i.v. sedation (74.0%) was reported from American Academy of Periodontology District 5 (south central United States), whereas District 7 (New Jersey and New York) reported the lowest usage (15.6%). CONCLUSIONS: Approximately half of all periodontists provide i.v. sedation, with more recent periodontal graduates more likely to personally offer and administer i.v. sedation services for their patients. Regional differences exist in the use and training of i.v. sedation.
- 125. I. K. Trindade-Suedam, B. F. Gaia, C. K. Cheng, P. A. Trindade, J. C. Bastos and B. S. Mattos. "Cleft lip and palate: recommendations for dental anesthetic procedure based on anatomic evidences." *J Appl Oral Sci* 20(1): 122-7**
 Patients with cleft lip and palate usually present dental anomalies of number, shape, structure and position in the cleft area and the general dentist is frequently asked to restore or extract those teeth. Considering that several anatomic variations are expected in teeth adjacent to cleft areas and that knowledge of these variations by general dentists is required for optimal treatment, the objectives of this paper are: 1) to describe changes in the innervation pattern of anterior teeth and soft tissue caused by the presence of a cleft, 2) to describe a local anesthetic procedure in unilateral and bilateral clefts, and 3) to provide recommendations to improve anesthetic procedures in patients with cleft lip and palate. The cases of 2 patients are presented: one with complete unilateral cleft lip and palate, and the other with complete bilateral cleft lip and palate. The patients underwent local anesthesia in the cleft area in order to extract teeth with poor bone support. The modified anesthetic procedure, respecting the altered course of nerves in the cleft maxilla and soft tissue alterations at the cleft site, was accomplished successfully and the tooth extraction was performed with no pain to the patients. General dentists should be aware of the anatomic variations in nerve courses in the cleft area to offer high quality treatment to patients with cleft lip and palate.

- 126. J. H. Unkel, J. S. Edwards, W. P. Piscitelli and G. W. Tye. “Dental surgery and anesthetic precautions of a patient with Down syndrome and juvenile rheumatoid arthritis: a case report.” *Pediatr Dent* 34(7): 517-20**

Down syndrome and juvenile rheumatoid arthritis have been associated with ligament laxity, specifically the atlantoaxial ligament, which maintains the proper positioning of the cervical first and second vertebrae. The joint consists of different pathological processes, and it is paramount that individuals with either condition be screened appropriately before surgery is contemplated. The purpose of this paper was to present a case of an individual with both conditions and describe precautionary measures that were undertaken to safely complete dental treatment under general anesthesia and avoid morbidity.

- 127. R. van Noort. “The future of dental devices is digital.” *Dent Mater* 28(1): 3-12**

OBJECTIVES: Major changes are taking place in dental laboratories as a result of new digital technologies. Our aim is to provide an overview of these changes. In this article the reader will be introduced to the range of layered fabrication technologies and suggestions are made how these might be used in dentistry. **METHODS:** Key publications in English from the past two decades are surveyed. **RESULTS:** The first digital revolution took place many years ago now with the production of dental restorations such as veneers, inlays, crowns and bridges using dental CAD-CAM systems and new improved systems appear on the market with great rapidity. The reducing cost of processing power will ensure that these developments will continue as exemplified by the recent introduction of a new range of digital intra-oral scanners. With regard to the manufacture of prostheses this is currently dominated by subtractive machining technology but it is inevitable that the additive processing routes of layered fabrication, such as FDM, SLA, SLM and inkjet printing, will start to have an impact. In principle there is no reason why the technology cannot be extended to all aspects of production of dental prostheses and include customized implants, full denture construction and orthodontic appliances. In fact anything that you might expect a dental laboratory to produce can be done digitally and potentially more consistently, quicker and at a reduced cost. **SIGNIFICANCE:** Dental device manufacturing will experience a second revolution when layered fabrication techniques reach the point of being able to produce high quality dental prostheses. The challenge for the dental materials research community is to marry the technology with materials that are suitable for use in dentistry. This can potentially take dental materials research in a totally different direction.

- 128. L. Van Zeghbroeck. “CAD/CAM treatment for the elderly--a case report.” *Gerodontology* 29(2): e1176-9**

BACKGROUND: When elderly develop signs and symptoms of Alzheimer's disease they lose their independence and neglect dental hygiene. Dentists are increasingly confronted by seniors who are in need but who have limited access to dental care. Caretakers and family are also often confronted with behavior problems besides the dental problems. **OBJECTIVE:** To report the importance of shorter and lower impact treatment for seniors when caretakers and family are confronted with a behavioral problem in addition to the dental problem. **MATERIALS AND METHODS:** In this case report, the oral management of a patient with Alzheimer's disease was described using chair side computer-aided design/computer-aided manufacturing (CAD/CAM) technology while constructing a bonded bridge. **DISCUSSION:** The case report emphasizes the importance of interaction with the patient and added a treatment method for patients with limited cognitive skills who become easily agitated or aggressive. **CONCLUSION:** The fabrication of a full ceramic bonded bridge utilizing the Cerec 3D chairside CAD/CAM technology in an Alzheimer patient has been shown to be a feasible, precise, aesthetic and durable solution. It added a technique for intervening with patients with limited tolerance for dental procedures, which improves the quality of life of both patient and family.

- 129. E. Varoni, M. Tarce, G. Lodi and A. Carrassi. “Chlorhexidine (CHX) in dentistry: state of the art.” *Minerva Stomatol* 61(9): 399-419**

Chlorhexidine (CHX) is one of the most commonly prescribed antiseptic agents in the dental field. It has a long-lasting antibacterial activity with a broad-spectrum of action and it has been shown to reduce plaque, gingival inflammation and bleeding. Its use is considered a powerful adjuvant to mechanical oral hygiene (brushing and flossing), especially in those cases in which it cannot be performed correctly. Available as mouthwash, gel, aerosol, spray and disks, CHX is considered a safe compound, with minimal and transitory local and systemic side effects. Data support its periodic use as an adjuvant to normal brushing and flossing in subjects unable to maintain proper oral hygiene due to physical and/or mental impairment, or lack of motivation, or decreased salivary rate. CHX is also a useful alternative to mechanical oral hygiene procedures in those cases in which they are contraindicated, e.g. after a surgical procedure, or as a preoperative rinse before procedures in which use of a dental dam is not possible. The aim of this article is to offer a complete review of literature regarding the characteristics, the applications and the problems associated with the use of chlorhexidine in the dental field.

- 130. E. Velan and B. Sheller. “Providing dental treatment for children in a hospital setting.” *Dent Clin North Am* 57(1): 163-73**

This article discusses aspects of providing dental treatment in hospitals to patients with complex medical and/or behavioral problems. Practical information for patient selection for care in a hospital operating room, obtaining hospital privileges, and other aspects of dental care in hospitals are introduced.

- 131. H. B. Waldman and S. P. Perlman. “Ensuring oral health for older individuals with intellectual and developmental disabilities.” *J Clin Nurs* 21(7-8): 909-13**

AIMS AND OBJECTIVES: To emphasize the oral health needs of older individuals with intellectual and developmental disabilities, the impact on the individual's general health and the role that can be played by nurses. **BACKGROUND:** All too often an examination and consideration of the oral health condition of this patient population by nurses/physicians is cursory at best. The increasing retention of the dentition into later years of life provides both the favorable abilities for eating, speech and self-esteem, but also the potential for local and general health concerns. **DESIGN:** Discursive paper. **METHOD:** Based on the findings from dental examination of thousands of international athletes in the Special Olympic Games and clinical experiences in academic and private practice settings for care of individuals with intellectual and developmental disabilities, a discursive listing was developed for use in a preliminary examination of the oral cavity. **CONCLUSION:** A nurse can play a critical role in the examination, preventive services and referrals for dental care for older individuals with intellectual and developmental disabilities. **RELEVANCE TO CLINICAL PRACTICE:** The specific oral health needs of older individuals with intellectual and developmental disabilities should be an integral component of the preventive and general health care provided by nurses.

132. H. B. Waldman and S. P. Perlman. "New York State ranked favorably for adults and reasonably well for children in terms of oral health standards." *N Y State Dent J* 78(5): 58-9

Results from the National Health Interview Survey place New York State at or near the top among states for the oral health standards of its residents. Nevertheless, continued unmet service needs exist, particularly for minority populations, individuals in lower income families and residents with disabilities.

133. A. Wiegand, J. P. Burkhard, F. Eggmann and T. Attin. "Brushing force of manual and sonic toothbrushes affects dental hard tissue abrasion." *Clin Oral Investig* 17(3): 815-22

OBJECTIVES: This study aimed to determine the brushing forces applied during in vivo toothbrushing with manual and sonic toothbrushes and to analyze the effect of these brushing forces on abrasion of sound and eroded enamel and dentin in vitro. **MATERIALS AND METHODS:** Brushing forces of a manual and two sonic toothbrushes (low and high frequency mode) were measured in 27 adults before and after instruction of the respective brushing technique and statistically analyzed by repeated measures analysis of variance (ANOVA). In the in vitro experiment, sound and eroded enamel and dentin specimens (each subgroup n = 12) were brushed in an automatic brushing machine with the respective brushing forces using a fluoridated toothpaste slurry. Abrasion was determined by profilometry and statistically analyzed by one-way ANOVA. **RESULTS:** Average brushing force of the manual toothbrush (1.6 +/- 0.3 N) was significantly higher than for the sonic toothbrushes (0.9 +/- 0.2 N), which were not significantly different from each other. Brushing force prior and after instruction of the brushing technique was not significantly different. The manual toothbrush caused highest abrasion of sound and eroded dentin, but lowest on sound enamel. No significant differences were detected on eroded enamel. **CONCLUSION:** Brushing forces of manual and sonic toothbrushes are different and affect their abrasive capacity. **CLINICAL SIGNIFICANCE:** Patients with severe tooth wear and exposed and/or eroded dentin surfaces should use sonic toothbrushes to reduce abrasion, while patients without tooth wear or with erosive lesions confining only to enamel do not benefit from sonic toothbrushes with regard to abrasion.

134. T. Willumsen, L. Karlsen, R. Naess and S. Bjorntvedt. "Are the barriers to good oral hygiene in nursing homes within the nurses or the patients?" *Gerodontology* 29(2): e748-55

OBJECTIVE: To explore nursing home patients' oral hygiene and their nurses' assessments of barriers to improvement. **BACKGROUND:** In nursing homes, nurses are responsible for patients' oral hygiene. **MATERIALS AND METHODS:** This study assessed the oral hygiene of 358 patients in 11 Norwegian nursing homes. 494 nurses in the same nursing homes participated in a questionnaire study. **RESULTS:** More than 40% of patients had unacceptable oral hygiene. 'More than 10 teeth' gave OR = 2, 1 ($p = 0.013$) and 'resist being helped' OR = 2.5 ($p = 0.018$) for unacceptable oral hygiene. Eighty percent of the nurses believed knowledge of oral health was important, and 9.1% often considered taking care of patients' teeth unpleasant. Half of the nurses reported lack of time to give regular oral care, and 97% experienced resistant behavior in patients. Resistant behavior often left oral care undone. Twenty-one percent of the nurses had considered making legal decisions about use of force or restraints to overcome resistance to teeth cleaning. **CONCLUSION:** Oral hygiene in the nursing homes needed to be improved. Resistant behavior is a major barrier. To overcome this barrier nurses' education, organizational strategies to provide more time for oral care, and coping with resistant behavior in patients are important factors.

135. Winning, I. Polyzois, K. Nylund, A. Kelly and N. Claffey. "A placebo-controlled trial to evaluate an anesthetic gel when probing in patients with advanced periodontitis." *J Periodontol* 83(12): 1492-8

BACKGROUND: The baseline periodontal examination is reported to be a painful dental procedure, but currently there are limited practical techniques to reduce this pain. The objective of this study is to evaluate the efficacy of an intrapocket anesthetic gel in the reduction of pain on periodontal probing in a group of untreated patients with generalized chronic periodontitis (CP). **METHODS:** This study is a randomized, double-masked, split-mouth, placebo-controlled trial. Thirty consecutive patients meeting the inclusion criteria had full-mouth periodontal probing performed in a split-mouth (right side/left side) manner. Before probing, both quadrants on each side were isolated and had a randomized gel (either placebo or test gel) placed in the periodontal pockets for 30 seconds. Pain was measured using two ungraded 100-mm horizontal visual analog scales (VAS) representing right and left sides of the mouth. **RESULTS:** The mean +/- SD VAS for the test gel was 23.5 +/- 16.8 mm, and the mean +/- SD VAS for the placebo gel was 23.5 +/- 14.6 mm. The mean +/- SD difference in VAS was 51.6 +/-

28.11 mm in favor of the anesthetic gel, and only age was found to be a marginally significant predictor. CONCLUSIONS: The VAS pain scores showed favorable anesthetic efficacy of the test gel compared to a placebo gel in reducing patients' pain on periodontal probing in a group of patients with generalized CP. It suggests that the gel may be used for patients who find the full-mouth periodontal probing experience particularly painful in view of other tested alternatives.

136. A. Wolff, P. C. Fox, S. Porter and Y. T. Konttinen. "Established and novel approaches for the management of hypo-salivation and xerostomia." *Curr Pharm Des* 18(34): 5515-21

Hypo-salivation, often symptomatically manifested as xerostomia (dry mouth sensation) may indicate the presence of altered salivary gland function and places patients at a higher risk for oral complications. Diverse symptoms and consequences have been associated with hypo-salivation, such as difficulties with speaking, swallowing and tasting and a significant increase in dental caries and other oral infections. Although hypo-salivation may be caused by a variety of conditions (head and neck radiotherapy, Sjogren's syndrome, medications, etc.), its hallmark symptom, xerostomia, is common to all such disorders, and varies only in intensity. Therefore, treatment is generally non-specific, and similar therapeutic approaches are used in all cases. In the present paper, available palliative oral care in the form of saliva substitutes, such as mouthwashes or gels, is detailed. Also salivary flow stimulants, such as certain pharmaceutical or gustatory preparations, acupuncture and electro-stimulation are reviewed. Finally, other approaches, currently under investigation, such as biological and gene therapies, are discussed. The degree of evidence of the best known methods and their intended use are analyzed.

137. A. Yilmaz, C. E. Ozdemir and Y. Yilmaz. "A delayed hypersensitivity reaction to a stainless steel crown: a case report." *J Clin Pediatr Dent* 36(3): 235-8

Stainless steel crowns are commonly used to restore primary or permanent teeth in pediatric restorative dentistry. Here, we describe a case of a delayed hypersensitivity reaction, which manifested itself as perioral skin eruptions, after restoring the decayed first permanent molar tooth of a 13-year-old Caucasian girl with a preformed stainless steel crown. The eruptions completely healed within one week after removal of the stainless steel crown. The decayed tooth was then restored with a bis-acryl crown and bridge. Since no perioral skin eruptions occurred during the six-month follow-up, we presume that the cause of the perioral skin eruptions was a delayed hypersensitivity reaction, which was triggered by the nickel in the stainless steel crown.

138. B. Yilmaz, B. T. Ozelik, D. M. Sarantopoulos and E. McGlumphy. "Importance of CT scans in diagnosing symptoms from misplaced implants." *Implant Dent* 21(2): 108-11

Maxillary sinus or nasal cavity invasion with implants might not be detected during implant placement. However, these complications cause problems in the long run. In the following two cases, maxillary sinus and nasal cavity invasion with misplaced implants could not be detected with panoramic and periapical radiographs; the patients had to undergo several prosthetic and surgical procedures to have their problems resolved. These problems were detected with CT imaging technique. For the first patient, the misplaced implant was removed and a new prosthesis was fabricated on the remaining implants. The prosthetic treatment of the second patient was finalized with new implants placed in the removed implant sites, and a new metal-resin implant-fixed complete dental prosthesis was fabricated.

139. M. Yitzhak, H. Sarnat, M. Rakocz, Y. Yaish and M. Ashkenazi. "The effect of toothbrush design on the ability of nurses to brush the teeth of institutionalized cerebral palsy patients." *Spec Care Dentist* 33(1): 20-7

Aim: To compare the effectiveness of two toothbrush designs in tooth brushing by nurses of individuals with cerebral palsy. Methods: Following instruction, nurses brushed the teeth of 21 individuals with a single-headed-toothbrush, and 22 with a triple-headed-toothbrush. After one month, the nurses brushed their patients with the other toothbrush, following instruction. Tooth brushing performance skill was evaluated and scored using the TB-PS-I/Ashkenazi index following the first brushing as well as on a recall visit one month later. Results: After 1 month, 7.6% of the nurses required further instruction following brushing with the triple-headed toothbrush compared to 15% after brushing with the single-headed. Reductions in plaque and gingival indices were greater after using the triple-headed than single-headed toothbrush. More nurses preferred the triple-headed toothbrush (75.5% compared to 22.6%). Conclusion: Brushing by nurses of cerebral palsy patients was more effective and instruction better retained with a triple-headed compared to single-headed toothbrush.

140. R. K. Yoon and S. Chussid. "Ocular complications following an inferior alveolar nerve block on a child patient: a review of the literature and report of a case." *Pediatr Dent* 34(4): 343-6

A 7-year-old male patient developed palpebral ptosis and paralysis of the extra-ocular muscles following local anesthetic administration for a major operative procedure on the permanent mandibular left first molar. Complete resolution occurred within approximately 30 minutes. The purpose of this case report was to detail an iatrogenic paresis of the third cranial nerve following local anesthetic delivery on a child patient.

141. M. Zarei, J. Ghoddsi, E. Sharifi, M. Forghani, F. Afkhami and P. Marouzi. "Comparison of the anaesthetic efficacy of and heart rate changes after periodontal ligament or intraosseous X-Tip injection in mandibular molars: a randomized controlled clinical trial." *Int Endod J* 45(10): 921-6

AIM: To compare the efficacy of supplemental anaesthesia using periodontal ligament injections (PDL) and intraosseous injections with the X-Tip system in terms of the measured heart rate and patient reported pain level. **METHODOLOGY:** In this single-blind randomized clinical trial, 40 patients (22 women, 18 men) with irreversible pulpitis who had experienced unsuccessful pain management by inferior alveolar nerve block with 2% lidocaine and 1 : 100 000 epinephrine were selected. Patients were divided equally and randomly into two groups. Supplementary anaesthesia was provided through intraosseous injection with the X-Tip system (X-Tip group) or by PDL injection (PDL group). After each step of injection, pain severity was assessed using a visual analogue scale. Patient heart rate was recorded with a pulse oximeter. Data were coded and analyzed using Mann-Whitney U-test with SPSS (version 16) software. **RESULTS:** Anaesthetic success was obtained in 100% of X-Tip and 70% of PDL group patients after the first supplemental injection. Compared with the first PDL injection, the first intraosseous injection resulted in a significant increase in heart rate ($P = 0.001$); however, this increase was short-lived (mean increase: 9-10 beats per min). No significant difference in heart rate or anaesthesia success was observed between men and women. **CONCLUSION:** Intraosseous injection using the X-Tip system was more effective than PDL injection as a supplementary anaesthetic for pulpectomy in mandibular molars or second premolars. However, the former resulted in a transient increase in heart rate.

142. L. Zhan, J. Cheng, P. Chang, M. Ngo, P. K. Denbesten, C. I. Hoover and J. D. Featherstone. "Effects of xylitol wipes on cariogenic bacteria and caries in young children." J Dent Res 91(7 Suppl): 855-905

The aim of the study was to investigate the efficacy of the use of xylitol-containing tooth-wipes in preventing dental caries in young children. In a double-blinded randomized controlled clinical trial, 44 mothers with active caries and their 6- to 35-month-old children were randomized to xylitol-wipe or placebo-wipe groups. The children's caries scores were recorded at baseline and 1 year. Salivary levels of mutans streptococci and lactobacilli were enumerated at baseline, 3, 6, and 12 months. Data were analyzed by intent-to-treat modeling with imputation for caries lesions and a linear mixed-effect model for bacterial levels. Significantly fewer children in the xylitol-wipe group had new caries lesions at 1 year compared with those in the placebo-wipe group ($P < 0.05$). No significant differences between the two groups were observed in levels of mutans streptococci and lactobacilli at all time-points. Daily xylitol-wipe application significantly reduced the caries incidence in young children as compared with wipes without xylitol, suggesting that the use of xylitol wipes may be a useful adjunct for caries control in infants (Clinicaltrials.gov registration number CT01468727).

143. G. Zhang, R. Hou, H. Zhou, L. Kong, Y. Ding, R. Qin, K. Hu, J. Xu and J. He. "Improved sedation for dental extraction by using video eyewear in conjunction with nitrous oxide: a randomized, controlled, cross-over clinical trial." Oral Surg Oral Med Oral Pathol Oral Radiol 113(2): 188-92

OBJECTIVE: The purpose of this study was to investigate the effect of a portable video eyewear entertainment system used in conjunction with nitrous oxide/oxygen sedation during the removal of impacted lower third molars. **STUDY DESIGN:** Thirty-eight patients had their bilateral third molars removed under local anesthesia and nitrous oxide/oxygen inhalation sedation in 2 visits. On one side, video eyewear was used (group NE). On the other side, the tooth was removed without the use of video eyewear (group N). Vital signs were monitored. Overall behavior and the outcome of treatment were assessed. **RESULTS:** All 38 patients completed the study. The mean scores on behavior rating in group NE were significantly higher than those in group N ($P < .05$). The majority of patients (92.1%) preferred nitrous oxide with video eyewear. **CONCLUSIONS:** The use of video eyewear appeared to augment the effectiveness of nitrous oxide sedation in dental extraction patients.

144. D. Ziebolz, A. Hildebrand, P. Proff, S. Rinke, E. Hornecker and R. F. Mausberg. "Long-term effects of tongue piercing--a case control study." Clin Oral Investig 16(1): 231-7

The aim of this study was to evaluate tooth and periodontal damage in subjects wearing a tongue piercing (TP) in comparison to matched control subjects without tongue piercing. Members of the German Federal Armed Forces who had TP (group TP) and a matched control group (group C) volunteered to take part in the study. The time in situ, localization and material of TP were documented. Dental examinations included DMF-T, oral hygiene, enamel fissures (EF), enamel cracks (EC) and recessions. Statistical analysis was determined by chi (2) test and the t test. Both groups had 46 male subjects (mean age 22.1 years). The piercings had been in situ for 3.8 +/- 3.1 years. Subjects in the TP group had a total of 1,260 teeth. Twenty-nine subjects had 115 teeth (9.1%) with EF (67% lingual). In group C (1,243 teeth), 30 subjects had 60 teeth with EF (4.8%, 78% vestibular) ($p < 0.01$). Thirty-eight subjects belonging to group TP had EC in 186 teeth (15%). In group C, 26 subjects with 56 teeth (4.5%) were affected by EC ($p < 0.001$). Twenty-seven subjects in group TP had 97 teeth (7.7%) with recessions. Lingual surfaces of anterior teeth in the lower jaw were affected most frequently (74%). In group C, 8 subjects had 19 teeth (1.5%) with recessions (65% vestibular). Differences between the two groups were statistically significant ($p < 0.001$). Tongue piercing is correlated with an increased occurrence of enamel fissures, enamel cracks and lingual recessions. Patients need better information on the potential complications associated with tongue piercing.

145. D. J. Zuluaga, J. Ferreira, J. A. Montoya and T. Willumsen. "Oral health in institutionalized elderly people in Oslo, Norway and its relationship with dependence and cognitive impairment." Gerodontology 29(2): e420-6

OBJECTIVE: Investigating oral health's relationship with dependency and cognitive state. **BACKGROUND:** Oral hygiene is poor in the institutionalized elderly. There are problems regarding the oral care of residents having poor mobility or cognitive

impairment. MATERIAL AND METHODS: Cross-sectional study involving 135 participants (mean age 85.7, SD 8.8 years) in two categories: nurses doing tooth cleaning and residents doing tooth cleaning. Those cleaned by nurses were categorized as cooperative or uncooperative. The oral hygiene status, presence of caries, retained roots and denture-related stomatitis were recorded. RESULTS: Of the participants, 70% had only natural teeth. The prevalence of caries was 28%. A significant correlation showed that having more teeth gave a poorer Simplified Oral Hygiene Index (OHI-S) ($p = 0.018$). The number of retained roots increased with the severity of cognitive impairment ($p < 0.05$). Significant differences were found between nurses or residents doing the tooth cleaning on the OHI-S ($p = 0.05$) and percentage of dental plaque ($p = 0.003$). Uncooperative residents had poorer oral hygiene ($p = 0.028$), more caries ($p = 0.008$) and were more often moderate-severe cognitive impaired ($p = 0.016$). CONCLUSIONS: A high percentage of participants had unacceptable oral hygiene. Residents whose teeth were cleaned by the nurses had poorer oral hygiene. Uncooperative residents had the worst oral hygiene and more caries.