Borrell LN, Burt BA, Taylor GW. Prevalence and Trends in Periodontitis in the USA: the NHANES, 1988 to 2000. J Dent Res 2005; 84:924-30.

Purpose: to examine whether the prevalence of periodontitis has changed between the NHANES III and the NHANES 1999–2000, and whether the differences in the prevalence of periodontitis among racial/ethnic groups have increased, decreased, or remained the same between the two surveys.

Materials and Methods: This study used data from the NHANES III and the NHANES 1999–2000. The NHANES III was conducted from 1988 to 1994. The NHANES 1999–2000 collected data between March, 1999, and December, 2000. NHANES III assessed the health status of a 31,311 subjects while NHANES 1999–2000 examined a total of 9956 subjects. This analysis was limited to the records of adults 18 yrs or older who self-identified as non-Hispanic black, non-Hispanic white, or Mexican-American, and who had a complete periodontal examination during the NHANES III (12,088) or the NHANES 1999–2000 (3214). Thus, the combined sample was 15,302. PD and CAL were measured at the midbuccal and mesiobuccal of each tooth in a randomly selected 2 quadrants in each subject. Race was the main variable (Black, White, and Mexican-American). Other variables were age at interview, gender, marital status, place of birth, education, income, presence of health insurance, history of diabetes, and tobacco use. Statistical analysis was performed.

Findings and Conclusions: Although blacks and Mexican-Americans showed worse profiles across education, income, health insurance, time since last dental visit, diabetes, and smoking than did whites, there were some improvements in education, income, dental insurance, and smoking for blacks and Mexican-Americans between the two surveys. The proportion of people without health insurance and the prevalence of diabetes increased between surveys for all groups. Although blacks and Mexican-Americans exhibited worse periodontal status than whites in both surveys, bleeding, recession, CAL & PD decreased significantly for all groups between the 2 surveys. Prevalence of periodontitis for the NHANES III was 7.3%, while for the NHANES 1999–2000 was 4.2%. Blacks exhibited the highest prevalence of periodontitis in each survey (11.4% and 6.8%), followed by Mexican-Americans (6.9% and 4.6%) and whites (6.7% and 3.8%) Blacks were 1.8 times more likely to have periodontitis than whites in both surveys. There was no statistically significant difference in the odds of having periodontitis for Mexican-Americans compared to Whites in either survey.

Dionne RA, Yagiela JA, Moore PA, et al. Comparing efficacy and safety of four intravenous sedation regimens in dental outpatients. JADA 2001; 132:740-51.

Purpose: To assess the relative efficacy of prototypic sedative drug regimens used for dental outpatients.

Materials and Methods: The multicenter study was performed at five dental schools. Each site enrolled approximately 200 patients, for a total of 997 evaluated subjects. Inclusion criteria of this study was the need for removal of 2 to 4 third molars, one of which was at least partially impacted in bone, and anticipated surgical duration of 30 minutes. The health status of subjects were ASA P1 (healthy) or P2 (mild systemic disease). The subjects were randomly assigned to one of five treatment groups, and the assessments were recorded by double-blinded manner. The five treatment groups consisted of 4 active treatments and a placebo control.

- Group 1: Placebo group.
- Group 2: Midazolam (mean: 8.6 mg) once until the clinical endpoint (slurred speech, drooping eye, etc.)
- Group 3: Midazolam + midazolam (mean total: 12.2 mg) as needed during the procedure.
- Group 4: Fentanyl (1.4 μg/kg) + midazolam (mean: 5.7 mg) until the clinical endpoint.
- Group 5: Fentanyl (1.4 μg/kg) + midazolam (mean: 5.8 mg) + methohexital as needed during the procedure.

During and after the procedure, they assessed anxiety, pain, amnesia, efficacy of sedation, and physiological values.

Findings:

1. Anxiety levels (Fig 1.): Group 1 patients showed the value for "tense, upset". Patients in all four of the active treatment groups reported significantly less anxiety than those in placebo group. Group 5 patients presented significantly less anxiety than other groups at 2 evaluation times (after 5 min. and completion of the procedure)
2. Pain levels (Fig 2.): Only group 5 patients reported significantly less pain than patients in all other groups.
3. Recall of events (Fig 3.): The Group 1 patients could have nearly total recall of local anesthetic administration and extractions, but other group patients reported significantly less recall of these procedures. Especially, group 3 and 5 methods had more effective amnesia than group 2 and 4.
4. Efficacy of sedation (Fig 4.): Patients' ratings – Group 5 > 3 >> 2 > 4 >> 1, Surgeons' ratings – Group 5 > 4 >> 2 > 3 >> 1.
5. Physiological values (Fig 5.): Group 4 and 5 showed decreased respiration rate, decreased O_2 saturation, and increased CO_2. It means that administration of fentanyl caused respiratory impairment.
6. Ambulatory function: The ability to walk without support for 6 ft. was impaired in all groups other than Group 1 at 60 minutes after the surgery. However, at 90 minutes, recovery was nearly complete in all groups.

Conclusions: The combination of fentanyl, midazolam, and methohexital showed the most effective sedation regimen among other methods.

Kinane DF, Riggio MP, Walker KF, MacKenzie D, Shearer B. Bacteraemia following periodontal procedures. J Clin Periodontol 2005; 32: 708–13.

Purpose: To evaluate the induced bacteraemia within periodontitis patients following routine periodontal procedures, namely periodontal probing, tooth brushing and ultrasonic scaling.

Materials and Methods: 30 volunteers with untreated moderate to severe chronic periodontitis disease and normal hematological profile. At baseline a blood sample was collected. Subjects where then probed on 6 areas around each tooth recording probing depths, recessions, and bleeding. At the end of that visit a blood sample was taken. 2 weeks later another blood sample was obtained and subjects were instructed to brush for 2 minutes, after which another blood sample was immediately obtained. A full-mouth ultrasonic scaling was then performed and a final blood sample taken. The incidence of bacteraemia was assessed using conventional microbiological culture and PCR.

Findings: Of the 30 volunteers in the study, 18 were males and 12 were females with a mean age of 42.3 years. After periodontal probing, samples from six subjects (20%) were found positive using the culture system. Subculturing of these samples resulted in the isolation of several bacterial species. After tooth brushing, one subject (3%) gave a positive blood culture and on subculturing the isolate was found to be Gemella haemolysans. After ultrasonic scaling, four bottles from three subjects (13%) were positive. Following periodontal probing, five samples (16%) were PCR positive. Following tooth brushing four samples (13%) were PCR positive. Seven samples (16%) were found to be PCR positive following ultrasonic scaling. Subjects with the deepest pockets were not necessarily those in whom bacteraemia was detected, indicating that healthier patients may be at an increased risk of bacteraemias. Ultrasonic scaling was found to be the procedure that caused the most bacteremias.

Conclusions: These findings suggest that bacteremias are induced by basic periodontal procedures.

Moles D, Needleman I, Niederman R and Lau R. Introduction to cumulative meta-analysis in Dentistry: Lessons learned from undertaking a cumulative meta-analysis in Periodontology. J Dent Res: 84 (4); 2005, 345-49. 23 (Refs)

Purpose: To review and understand the value of the cumulative meta-analysis approach in Dentistry.

Materials and Methods: For the purpose of the study, data for a previous 1 of published systematic review; [the effectiveness of adjunctive systemic antimicrobial for the treatment of Periodontitis undertaken by the European Federation of Periodontology (Herrera et al, 2002)]; was chosen to demonstrate the technique of cumulative meta-analysis. This systematic review evaluated the effect of systemic antibiotics as an adjunct therapy to SRP compared with SRP alone. To perform a meta-analysis only changes in CAL reported in the systematic review were used. Conventional and cumulative meta-analyses were undertaken with the used of both fixed and random-effect models, with the "meta view" software incorporated within the Cochrane "review manager" program. CAL were categorized into two main groups: a) all/moderate pockets at baseline (PPD 4-6mm) and, b) deep pockets at baseline (PPD >6mm).

Findings: The overall effect size for adjunctive antimicrobial in all/moderate sites from the meta-analysis is a mean difference of 0.18 mm (95% CI 0.00, 0.7; P=0.05) in favor of the adjunctive antimicrobial. The test for heterogeneity gave a chi-square value of 1.00, df 4, P=0.91, showing no evidences of any difference in the effect between the different trials where the different antibiotic regimens were used. The results were based on measurement from 147 patients in total up to the year 1999. The cumulative meta-analysis indicated a statistical difference at the P<0.05 level marginally in 1998. For deep sites the conventional meta-analysis indicated a mean difference of 0.37 mm (95% CI 0.12, 0.61; P= 0.004). The test for heterogeneity gave a chi-square value of 1.99, df4, P=0.74, indicating no evidence of a difference in the results from the different antimicrobials. For these deeper sites, the cumulative meta-analysis indicates that a statistical difference could not have been detected.

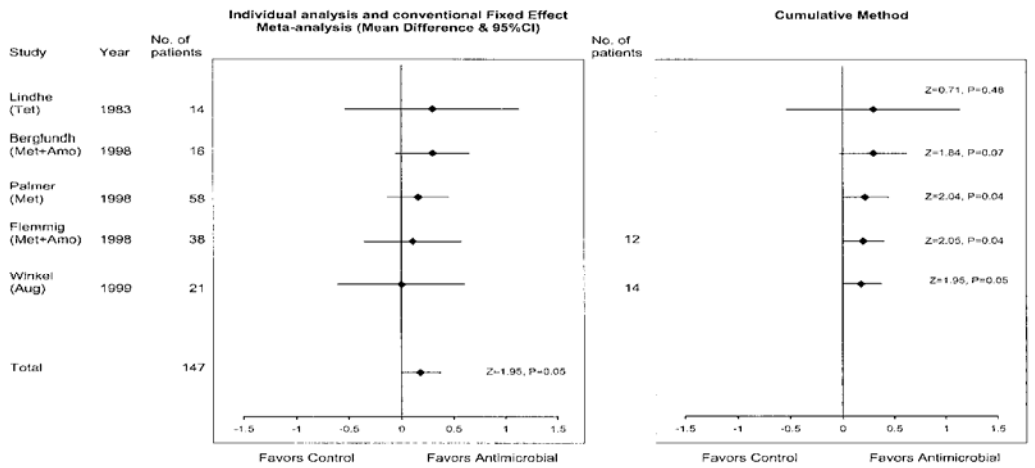

Figure 1. Conventional and Cumulative Meta-analyses of 5 Trials of Systemic Antimicrobials as an Adjunct to Scaling and Root Planing for All/Moderate Periodontal Pockets: Difference in Mean Gain in Clinical Attachment Level and 95% CI (SRP + antimicrobial vs. SRP alone) in mm. Key to Figs.: Aug, Augmentin®; Clin, Clindamycin; Dox, Doxycyline; Met, Metronidazole; Met+Amo, Metronidazole and Amoxicillin in combination; Rod, Rodogyl® (Metronidazole and Spiramycin in combination); Spi, Spiramycin; Tet, Tetracycline; and Tet/Spi, Tetracycline or Spiramycin.

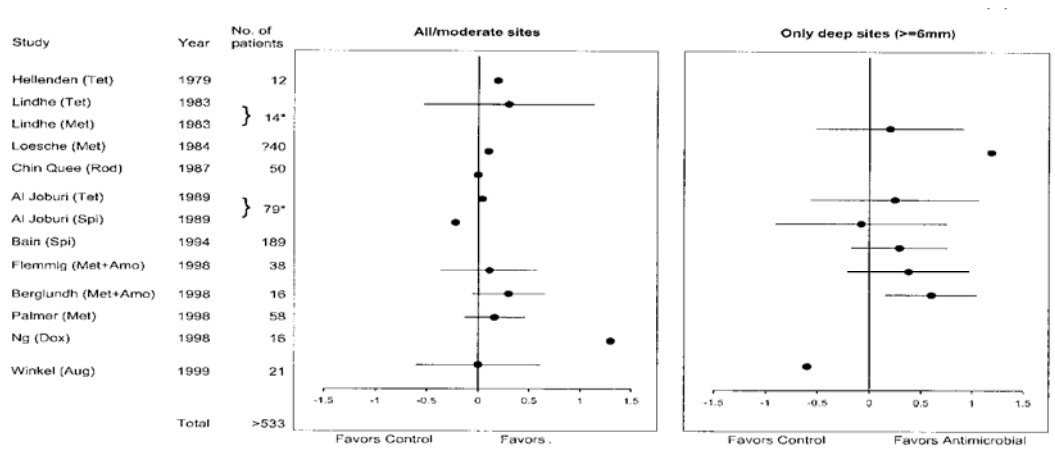

Figure 3. Results of Trials of Systemic Antimicrobials as an Adjunct to Scaling and Root Planing: Point Estimates of Differences in Mean Gain in Clinical Attachment Level and 95% CI Where Available (SRP + antimicrobial *vs*. SRP alone) in mm (key as for Fig. 1). Note: *Different antimicrobial sub-studies that share control groups. In each case, the total number of patients for the study is listed once only, to avoid double-counting the controls. #Not reported or unclear.

Conclusions: For the demonstration performed in this study, pooling of the available data, whether by cumulative or conventional meta-analysis, indicates a small statistically significant benefit regarding CA gain for SRP with adjunctive antibiotics when compared with SRP alone. Because of the lack of enough information and the results obtained in this exercise the author concluded by suggesting that investigators consider their clinical trials as part of an information continuum and to report sufficient detail to permit the trial's incorporation into subsequent syntheses.

Definitions according to the author's introduction:

Systematic review**;** is a review of a clearly formulated question that attempts to minimize bias using systematic and explicit methods to identify, select, critically appraise, and summarized relevant research. Most commonly, this will take the form of a series of "evidence tables" that summarize the findings from the studies included in the review.

Meta-analysis is used to quantitatively synthesizing the review data to give an overall estimate of the effect size and its precision (Egger et al, 2001).

The standard approach for undertaking a meta-analysis is to pool all available suitable data simultaneously at a single point in time. This provides a single estimate of the effect size of interest, and an associated confidence interval as a measure of the imprecision of the point estimate. Cumulative meta-analysis is the product of performing a new meta-analysis every time a new piece emerges (Lau et al, 1995). This permits the evaluation of the additional contributions made by individual studies to the cumulative pooled results of the preceding studies.

Shanies S. The significance of periodontal infection in cardiology. Grands Rounds in oral-systemic medicine 2006; 1:24-33.

Purpose: To evaluate and discuss the link between periodontal disease and cardiovascular disease.

Materials and Methods: Review of the literature and author's opinion.

Findings and Conclusions: Cardiovascular disease (CVD) accounts for 38% of all deaths in North America. CVD was once thought of as a disease primarily induced by accumulation of lipid laden cells. Now it is evident that high cholesterol is only important in 50% of the cases. The prevalence of both periodontal disease and atherosclerosis is rampant. Periodontal disease is a preventable and treatable contributor to the burden of cardiovascular disease, and as such is a modifiable risk factor.

Quantifying risk for CVD**:** Factors associated with increased risk for CVD could be classified into major, predisposing and conditional risk factors. Major risk factors include advancing age, smoking, elevated blood pressure, high cholesterol and low serum HDL. Predisposing risk factors include: abdominal obesity, ethnic characteristics, family history, stress, and physical inactivity. Conditional risk factors include: elevated serum homocysteine, lipoprotein, triglycerides, inflammatory markers, prothrombotic factors and small LDL particles. Predisposing risk factors are agents that worsen independent risk factors. Conditional risk factors are associated with an increased risk for CVD although their causative contributions to CVD have not been well documented. A strong argument may be made that periodontal disease should be considered both a predisposing and a conditional risk factor. We have however made progress in understanding the link between periodontal infections and risk for CVD such as heart disease, stroke, and peripheral vasculature disease, all of which share atherosclerosis as a common feature. Recent research found bacteria levels were elevated in only those patients with a history of myocardial infarction, suggesting that increased loads of subgingival bacteria present a danger for systemic health. The contribution of periodontal infection to the inflammatory burden is theorized to be through both a direct action on blood vessel walls, and by indirectly inducing the liver to produce acute phase proteins. Periodontal treatment has been shown to reduce levels of high sensitivity C-reactive protein (hsCRP) and IL-6 with a simultaneous improvement in endothelial function. This however does not prove a casual relationship but only supports it.

The contribution of infection in developing atherosclerotic lesion: It is now thought that the cumulative burden of infection at various sites is what affects the progression of athersoscleosis and the clinical manifestations of CVD. Various studies have implicated P. Gingivalis as a part of transient bacteremia that can lead to the direct invasion of blood vessels. Recently there is serological evidence that an infection caused by P. gingivalis increases the risk for MI; high P. gingivalis antibody levels have been shown to predict MI independently of classical cardiovascular risk factors, and infection caused by major periodontal pathogens may be associated with future stroke. In another investigation those with sever periodntitis had a 4.3 times greater risk of cerebral ischemia than subjects with mild periodontitis or healthy subjects. Gingivitis and radiographic bone loss were also associated with the risk of cerebral ischemia, while tooth decay was not. A recent investigation demonstrated a direct relationship between microorganisms from periodontal infection and subclinical atherosclerosis. This

relationship was found to be independent of hsCRP level. The same research found that bacteria casually related to periodontitis are related to increased carotid intima-media thickness (IMT), an important marker of early atherosclerosis. The same study has found that white blood cell values tend to rise with both increasing levels of periodontopathic bacteria and Increased carotid IMT.

Making the case for hsCRP testing in dental practices**:** Certain markers of inflammation appear to play a central role in the development and progression of atherosclerosis. HsCRP one of the acute phase proteins produced by the liver in response to infection, is a specific systemic marker of vascular inflammation that appears to have a strong association with adverse vascular events. Levels lower than 1.0mg/L, indicate a person being at low risk for developing cardiovascular disease, while higher levels indicate moderate and high risk.

The role of dental professionals in screening patients for CVD risk: along with monitoring blood pressure, the addition of chair side hsCRP testing has the potential to become a significant tool for identification of patients at risk for CVD. This may be especially valuable in primary prevention of CVD.

Zemanovich MR, Bogacki RE, Abott DM, et al. Demographic variables affecting patient referrals from general practice dentists to periodontists. J Periodontol 2006; 341-9.

Purpose: to investigate referral relationship between general dentists and periodontists in state of Virginia.

Materials and Methods: Questionnaires focuses on demographic variables were mailed to 800 GPs in Virginia. These variables include demographics of referring doctor, demographics of referring doctor's practice, procedure referred, and empirical reason for a referral. Data collected was analyzed statistically.

Findings and Conclusions: Survey questionnaires had a respond rate of 37.1%. The average respondent age was 49.3 years, over one third were male, and had been in practice for 10-20 years. 50.9% are solo practitioners; almost ¾ had at least one full time hygienist. 97.8% of respondents referred to periodontists; greater than ½ sent 3 or more patients per month to periodontists, and most utilized 2 different periodontists. Top 5 procedures referred were generalized periodontal disease, localized periodontal disease, soft tissue grafting, implant placements, and crown lengthening. Influence to refer 1) dislike periodontal procedures, support of a treatment plan, desire to consult, desire to restrict own services, a difficult patient. Influence on choice of periodontist 1) the ability and skill of periodontist 2) good communication with periodontists 3) previous patient satisfaction with the periodontist 4) previous treatment success with periodontist 5) personality of periodontist.4 demographic variables have a statistical influence on referral patterns of generalist to periodontists. These included female gender, practice with 2 dentists, practices with $\geq$2 hygienists, and being > 5miles away.