

CHANGES IN HEALTH CARE: IT'S A GOOD THING

Dr. Sean G. Boynes
Director of Dental Medicine
CareSouth Carolina
Society Hill, South Carolina

Integrated Dental Medicine

- Is based in the fact that oral health is a vital aspect to overall systemic well being
- A partnership between all health care providers that identifies and creates a care structure with the areas of overlap that can improve the patient experience
- Sets goals to improve both oral and systemic outcomes
 - Systemic treatment with dental care

DentaQuest
INSTITUTE

Levels of Integration

- Low (basic/simple)
- Moderate
- High
- Creative

safety net
SOLUTIONS



Levels of Integration

- **Basic Level Integration:** A bi-directional cross-referral process supporting referrals from dental to medical and vice-versa; consistent appointment queries during patient encounters for appointment due dates; use of cross promotional propaganda; BMI, blood pressure, and heart rate measurements administered in the dental setting.
- **Moderate Level Integration:** All providers possess a basic understanding of complementary disease processes; appropriate application of medical and dental interventions; target population identification and understanding; achieving or nearing meaningful use; partnerships facilitating community outreach; topical fluoride application in the medical setting.
- **High Level Integration:** A high percentage of patients having seen both medical and dental providers on a regular basis; population health care coordination; implementation of a quality assurance plan; sharing of systemic disease benchmarks; high level medical and dental screenings.
- **Creative Level Integration:** A 'wide- open' level that should encourage innovation, allows creativity, and facilitates professional and patient development.

Target Populations

- Based on Population Health
- Assess the most at risk populations with individual practices and start by focusing on those patients
- Reach a level of success with those individual populations and move onto the next

Integration = Cost Reduction



Aetna's Data Warehouse Analysis - 2006

- Considered the first major integration, closed-claims analysis
- 2 years of service evaluation
- 116,306 members that had continuous medical and dental coverage evaluated in study
- Evaluated three possible chronic conditions
 - Diabetes
 - Coronary Artery Disease
 - Cerebrovascular Disease
- Evaluated cost as it relates to dental diagnosis (not received treatment or no treatment comparison)

Aetna's Data Warehouse Analysis - 2006

- Periodontitis treatment groups had a lower retrospective risk for their chronic condition than patients without periodontitis treatment.
- Recommend examination of the oral cavity for patients with diabetes, coronary artery disease, and cerebrovascular disease.
- Found a need for periodic dental visits for patients with diabetes and cardiovascular disease
- Patients with periodontitis had a higher cost per member per month than patients with gingivitis, other dental diagnosis or no dental diagnosis

United Healthcare: Medical Dental Integration Study - 2013

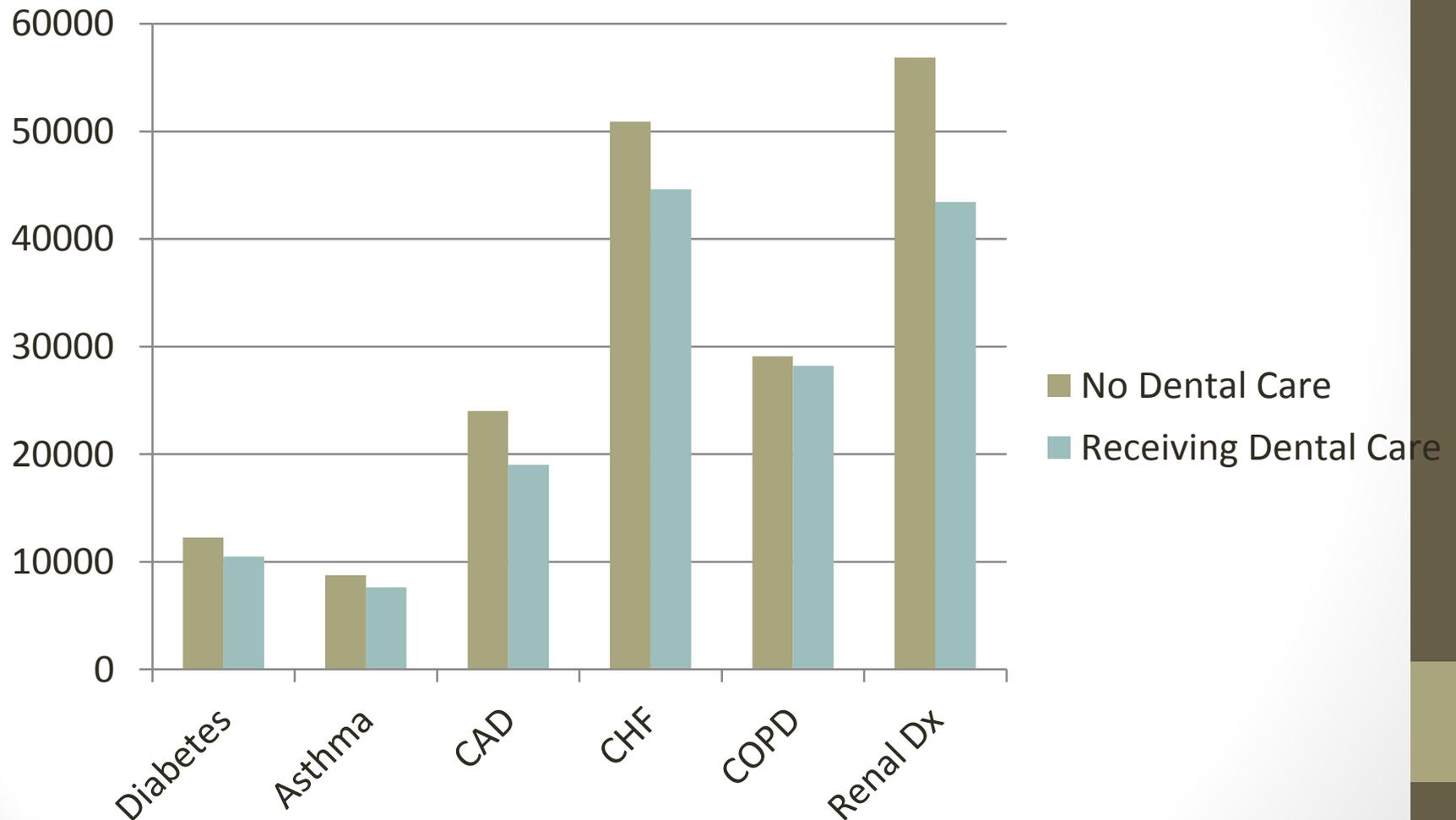
- Study compares the medical and pharmacy costs of individuals with six chronic medical conditions with the dental treatment they receive to determine if there is a difference in total health care costs associated with dental treatments.
 - Diabetes
 - Asthma
 - Congestive Heart Failure
 - Coronary Artery Disease
 - Chronic Obstructive Pulmonary Disease
 - Chronic Kidney/Renal Failure

United Healthcare:

Medical Dental Integration Study - 2013

- Utilized 3 years of dental claims experience with 2 years of United Healthcare Evidence Based Medicine and episode treatment group claims analysis.
- Summary
 - Net medical costs (including pharmacy costs) for members who received dental care was on average **\$1,037** lower **per individual** than medical costs for members not receiving care, after adjusting for extra expense of dental care.
 - The largest medical savings (\$1,849) were for members who were not medically compliant with their disease management program.
 - Biggest impact related to members who received frequent cleanings and/or periodontal maintenance.

United Healthcare: *[Non-Med Compliant]* Medical Dental Integration Study - 2013

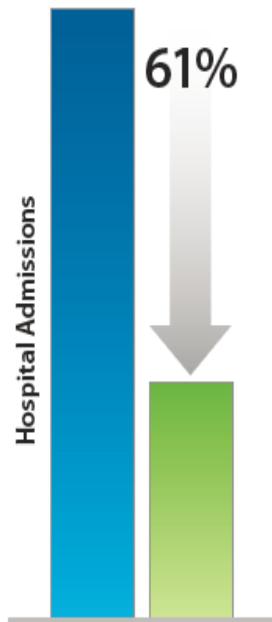


Integrated Model (Cost Reduction)

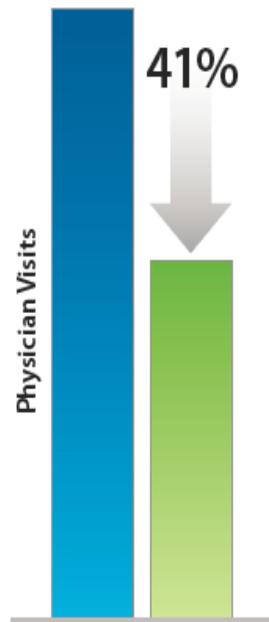
- Cost Effective
 - Jeffcoat et al. found that \$10,672 was spent for medical care for patients with diabetes who did not have periodontal treatment.
 - Revealed an average reduction of approx. 32% in cost per year of those with periodontal treatment.

Integrated Model (Cost Effective)

Reduction in Hospital Admissions



Reduction in Physician Visits



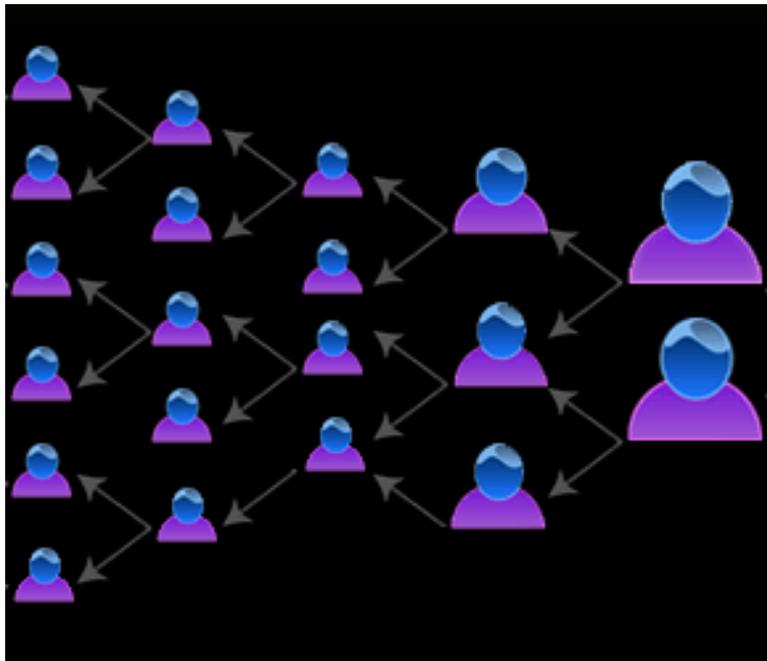
Reduction in Medical Costs



Study of individuals with diabetes who received:

-  No Periodontal Treatment
-  Periodontal Treatment

Medical Referral to Dental



Evaluating the Medical Referral Process

- Quality Study to evaluate pilot program of medical referrals into dental program
 - Urgent Need Appointments
- Analysis of all referrals until 50 (n=50) referrals were completed
- Total of 69 referrals evaluated with 19 no shows (27.5% no-show rate)
 - Total Division no show rate at time was approximately 4%

*Preliminary
Analysis*

Evaluation of Medical Referral Process

- Completed referrals by 12 physician teams (n=50)
 - Referrals most likely completed by nursing staff and occasionally by front office
 - 2 physicians completing referral forms sent to CSCDM
 - 0% no show rate on these referrals
 - Add'l information – form completed in the presence of patient

*Preliminary
Analysis*

Evaluation of Medical Referral Process

- Questionnaire to patients consisting of a series of care related questions
- Completed by all 50 subjects

*Preliminary
Analysis*

Patient Questionnaire

- Have you been to the ER in the last year for the same oral/tooth issue that brought you here today?
 - YES: 48.0%
 - NO: 52.0%

*Preliminary
Analysis*

Patient Questionnaire (Likert)

- 8 questions used the Likert scale to determine agreement with statement
 - 1- Strongly agree
 - 2- Agree
 - 3- Neither agree or disagree
 - 4- Disagree
 - 5- Strongly disagree

*Preliminary
Analysis*

Patient Questionnaire (Likert)

- I found it unusual that my doctor/physician referred me directly to a dentist for care.
 - 1.16 ± 1.69 (Strongly Agree)
- My teeth have a very important impact on my overall health.
 - 1.82 ± 1.02 (Agree)
- It is absolutely necessary for the dentist to have knowledge of my own personal medical history or doctor treatment.
 - 1.74 ± 0.99 (Agree)

Preliminary
Analysis

Patient Questionnaire (Likert)

- Because the dentist only treats the teeth, it really is not necessary for him/her to know all of the medicine I take.
 - 3.02 ±1.62 (Neither)
- The dentist does not really need to know my entire medical history because I am being seen for an emergency/urgent care appointment.
 - 3.50 ±1.13 (Neither -to- Disagree)
- I feel it is very important for my doctor to talk with my dentist to help coordinate my complete health care.
 - 1.56 ±0.77 (Agree -to- Strongly Agree)

Preliminary
Analysis

Patient Questionnaire (Likert)

- I prefer and enjoyed this process of my dentist and doctor/physician talking to each other during my appointments with them both.
 - 1.70 ±0.76 (Agree)
- I do not feel comfortable talking with the dentist about my medical history.
 - 4.02 ±0.98 (Disagree)

Preliminary
Analysis

Systemic Improvement - Diabetes

- Meta analysis results propose a near 1% improvement in glycated hemoglobin (A1C)
- Some studies report higher level of improvement (10-20%) in patients that are medically non-compliant and/or considered as lower socioeconomic status
- Proposed to decrease incidence of cardiovascular risk with diabetic patients (chronic tooth pain)

Systemic Improvement – Cardiovascular Disease

- Lockhart et al. “conflicted data” / “not enough focus on missing teeth”
- Newer studies are focusing on connection of missing teeth and periodontal therapy
 - Older adults with 1 to 5 missing teeth and greater than 6 missing teeth, but not all teeth missing, were more likely to report presence of cardiovascular disease as compared with older adults who had no missing teeth.
 - Observed that adults who visited the dentist were less likely to report cardiovascular disease compared to those who did not visit dentists in the past year.

Systemic Improvement - Stroke

- Several studies have also reported a major positive association between periodontal disease and ischemic stroke, in stroke free patient populations.
- A new study completed at the Univ. of South Carolina also found periodontal disease is independently associated with recurrent vascular events in stroke/TIA patients and aortic arch thickness

Systemic Improvements

- Late life depression
- Dementia
- Patients with Special Health Care Needs
- HIV/AIDS
- Cirrhosis
- Hormone related issues/disorders
- Asthma
- Autoimmune disease

References

- Albert et al. (2006); An examination of periodontal treatment and per member per month medical costs in an insured population. *BMC Health Services Research* 6:103-113.
- American Academy of Pediatrics (AAP), Medical Home Initiatives for Children With Special Needs Project Advisory Committee. (2002) The medical home. *Pediatrics*. 110:184–186.
- Anhang et al. (2004); HPV communications. Review of existing research and recommendations for patient education. *Cancer Journal for Clinicians* 54:248-259.
- Barasch A, et al. (2012) Random blood glucose testing in dental practice: a community based feasibility study from glucose testing in dental practice: a community based feasibility study from the Dental Practice-Based Research Network. *J Am Dent Assoc*. 143:262-269.
- Bassett, KB et al. (2014). *Local anesthesia for dental professionals*. Prentice Hall, 2014.
- Beck JD, Offenbacher S. (2005) Systemic effects of periodontitis: epidemiology of periodontal disease and cardiovascular disease. *J Periodontol* 76:2089-2100.
- Bernal-Pacheco O, Román GC. (2007) Environmental vascular risk factors: new perspectives for stroke prevention. *J Neurol Sci*. Nov 15;262(1-2):60-70. Epub 2007 Jul 25.
- Borrell LN, et al. (2007) Diabetes in the dental office: using NHANES III to estimate the probability of undiagnosed disease. *J Periodontal Res* 22:559-565.
- Brown TT, et al. (2011) The effect of dental care on cardiovascular disease outcomes: an application of instrumental variables in the presence of heterogeneity and self-selection. *Health Econ* 20(10):1241-56.
- Calayco DC et al. (2011) A1C and cardiovascular outcomes in type 2 diabetes. *Diabetes Care* 34:177-183.
- CDC (2010); National Center for Health Statistics, Oral and Dental Health.
<http://www.cdc.gov/nchs/fastats/dental.htm>
- Chan HH et al. (2012); Salivary proteins associated with periodontitis in patients with type 2 diabetes mellitus. *International Journal of Molecular Sciences* 13:4652-4654.
- Cleveland et al. (2011); The connection between human papillomavirus and oropharyngeal squamous cell carcinomas in the United States. *JADA* 142:915-924.

References

- Darre L et al. (2008) Efficacy of periodontal treatment on glycemic control in diabetic patients: a meta-analysis of interventional studies. *Diabetes Metab.* 34:497-506.
- D'Souza et al. (2007); Case control study of HPV and oropharyngeal cancer. *New England Journal of Medicine* 356: 1944-1956.
- Engebretson et al. (2013) The effect of nonsurgical periodontal therapy on HA1C levels in persons with type 2 Diabetes and chronic periodontitis. *JAMA* 310:2523-2532.
- Engstrom et al. Efficacy of screening for high blood pressure in dental health care. *BMC Public Health* 2011; 11:194-201.
- Genco RJ et al. (2014) Screening for diabetes mellitus in dental practices: a field trial. *J Amer Dent Assoc.* 145:57-64.
- Glick M, Greenberg BL. The potential role of dentists in identifying patients' risk of experiencing coronary heart disease events. *J Am Dent Assoc.* 2005; 136:1541-1546.
- Gordon et al (2011). Viral infections of the mouth. Medscape Reference. <http://emedicine.medscape.com/article/1079920-overview#showall>. Accessed 06/17/2014.
- Grau AJ et al. (2010) Common infections and risk of stroke. *Nat Rev Neurol* 6:681-694.
- Grossi SG. (1997) Treatment of Periodontal Disease in Diabetics Reduces Glycated Hemoglobin. *J Periodontol* 68:713-719.
- Haas DA. (2006); Management of medical emergencies in the dental office: conditions in each country, the extent of treatment by the dentist. *Anesth Prog* 2006; 53:20-24.
- Herrero et al. (2003); Human papillomavirus and oral cancer. The International Agency for Research on Cancer Multicenter Study. *Journal of the National cancer Institute.* 95:1772-1783.
- Holve, S. (2008). An observational study of the association of fluoride varnish applied during well child visits and the prevention of early childhood caries in American Indian children. *Maternal and child health journal*, 12, 64-67.
- Janket et al. (2003) Meta analysis of periodontal disease and risk of coronary heart disease and stroke. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 2003; 95:559-569.
- Janket et al. (2005) Does periodontal treatment improve glycemic control in diabetic patients: a meta analysis. *JDR* 84:1154-1159.

References

- Jeffcoat et al. (2012); Periodontal therapy reduces hospitalizations and medical costs in diabetics. Abstract: Am Assoc of Dental Research; March 23, 2012.
- Joshipura et al. (1996). The impact of edentulousness on food and nutrient intake. J Am Dent Assoc. 1996; 127:459-467.
- Krol (2004); Educating pediatricians on children's oral health: past, present, and future. Pediatrics 113:487-492.
- Lee JM et al. Salivary diagnostics. Orthodontics and Craniofacial Research 2009; 12:206-211.
- Lewis C et al. (2000); The role of the pediatrician in the oral health of children: a national survey. Pediatrics 106:1-7
- Lewis C et al. (2005) Unmet Dental Care Needs Among Children With Special Health Care Needs: Implications for the Medical Home. Pediatrics 116:e426-e431.
- Li S, et al. (2011) Development of clinical guideline to predict undiagnosed diabetes in dental patients. J Am Dent Assoc. 142:28-37.
- Lockhart, P. B., Bolger, A. F., Papapanou, P. N., Osinbowale, O., Trevisan, M., Levison, M. E., ... & Baddour, L. M. (2012). Periodontal disease and atherosclerotic vascular disease: does the evidence support an independent association? A scientific statement from the American Heart Association. *Circulation*, 125(20), 2520-2544.
- Mattheus and Mattheus (2014); Saving one smile at a time: oral health promotion in pediatric primary care practice. Open Journal of Nursing. 4:402-408.
- Maxwell et al. (2010). Tobacco use in human papillomavirus-positive advanced oropharynx cancer patients related to increased risk of distant metastases and tumor recurrence. Clin Cancer Res 16:1226-1235.
- Malamed, S. F. (2004). *Handbook of local anesthesia*. Elsevier Health Sciences.
- Malathi et al. Salivary diagnostics: a brief review. ISRN Dentistry 2014; OPEN ID# 158786 (8 pages).
- Mealey BL. (2010) Diabetic emergencies in the dental office. Armenian Medical Network. <http://www.health.am/db/diabetic-emergencies/>
- Moore PA, et al (2001). Type 1 diabetes mellitus, xerostomia, and salivary flow. Oral Surg, Oral Med, Oral Pathol, Oral Radio, Endod. 92:281-91.

References

- Moore PA. (2002) The diabetes-oral health connection. *Compendium* 23:14-20.
- Paz et al (1997). Human papillomavirus (HPV) in head and neck cancer: an association of HPV 16 with squamous cell carcinoma of Waldeyer's tonsillar ring. *Cancer* 79:595-604.
- PEW Center on States (2011); *The State of Children's Dental health: Making Coverage Matter*. The PEW Charitable Trust.
- Pfaffe T et al. Diagnostic potential of saliva: current state and future applications. *Clinical Chemistry* 2011; 57:675-687.
- Qvarnstrom M et al (2008); Salivary lysozyme and prevalent hypertension. *J of Dental Research* 87:5:480484.
- Sanossian N, et al. (2011) Subpar utilization of dental care among Americans with a history of stroke. *J Stroke Cerebrovasc Disease*. May-Jun;20(3):255-9. Epub 2010 Jul 24.
- Scannapieco et al. (2003). Associations between periodontal disease and risk for atherosclerosis, cardiovascular disease, and stroke. A systematic review. *Ann Periodontol*. 8:38-53.
- Sen S, Sumner R, Hardin J, et al. Periodontal disease and recurrent vascular events in stroke/transient ischemic attack patients. *Journal of Stroke and Cerebrovascular Diseases* 2013; 22:1420-1427.
- Seremi A, et al. (2005) Periodontal disease and mortality in type 2 diabetes. *Diabetes Care*. 28:27-32.
- Shultis WA, et al. (2007) Effect of periodontitis on overt nephropathy and end-stage renal disease in type 2 diabetes. *Diabetes Care*. 30:306-11.
- Sim SJ et al. (2008) Periodontitis and the risk for non fatal stroke in Korean adults. *J Periodontol*79:1652-1658.
- Simpson et al. (2010) Treatment of periodontal disease for glycemic control in people with diabetes. *Cochrane Database Syst Rev*;5:CD004714
- Starfield B, Shi L. (2004) The medical home, access to care, and insurance: a review of evidence. *Pediatrics*. 113(suppl):1493-1498.
- Stauss SM, et al. (2010) The dental office visit as a potential opportunity for diabetes screening: an analysis using NHANES 2003-2004 data. *J Public Health Dent* 70:156-162.

References

- Stewart JE, et al. (2001) The effect of periodontal treatment on glycemic control in patients with type 2 diabetes mellitus. *J Clin Periodont.* 28:306-10.
- Stratton et al. (2000) Association of glycaemia with macrovascular and microvascular complications of type 2 diabetes (UKPDS 35): prospective observational study. *BMJ* 321:405–12.
- Taylor GW et al. (2008) Periodontal disease: associations with diabetes, glycemic control and complications. *Oral Dis.* 14:191-203.
- Tran P and Mannen J. (2009) Improving oral healthcare: improving the quality of life for patients after a stroke. *Spec Care Dentist.* Sep-Oct;29(5):218-21.
- Truman et al. (2002); Task force on community preventive services. Reviews of evidence on intervention to prevent dental caries, oral and pharyngeal cancers and sports related craniofacial injuries. *Am Journal of Preventative Medicine* 23:21-54.
- United Concordia Wellness Oral Health Study (2012); <http://directbenefits.com/PDFs%20-%20Tools/United%20Concordia%20Dental%20Wellness%20Study.pdf>
- United Healthcare and Optum. Medical Dental Integration Study, March 2013. http://www.uhc.com/live/uhc_com/Assets/Documents/B2H_Study.pdf
- US Department of Health and Human Services [USDHHS] (2000); Oral Health in America: a report of the surgeon general. Department of Health and Human Services, National Institute of Dental and Craniofacial Research, National Institutes of Health. <http://www.surgeongeneral.gov/library/reports/oralhealth/index.html>
- Watson et al. (2008); Using population based cancer registry data to assess the burden of human papillomavirus associated cancers in the United States. *Cancer* 113(10 suppl.):2841-2854.
- Wiener, R. C., & Sambamoorthi, U. (2014). Cross-Sectional Association between the Number of Missing Teeth and Cardiovascular Disease among Adults Aged 50 or Older: *International Journal of Vascular Medicine.* BRFSS.

Questions???