

Periodontal Disease and Systemic Disease: Is there a link?

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 - Figures Courtesy of I-C. Wang D.M.D.

Diabetes

- Type I Diabetes
 - Auto immune destruction of insulin producing B cells in pancreas
 - < 30 years old
 - Hyperglycemia
 - Treatment : Insulin
- Type II
 - 90 %
 - Onset midlife
 - Insulin tolerance
 - Hyperglycemia
 - Treatment: Diet, exercise, oral meds, insulin
- Gestational Diabetes

Diabetes and Periodontal Disease

- Pima Indians studies
Subjects with Type II DM have 3 times higher incidence of periodontal disease
- Periodontitis progresses more rapidly in patients with uncontrolled diabetes
- Poorly controlled and long duration of diabetes are in highest risk group

Diabetes and Periodontal Disease

- Patients with severe periodontal disease demonstrated worse glycemic control than subjects with minimum destruction
- Mechanical and systemic anti-microbial therapy may improve glycemic control

Measures of diabetes

- Blood glucose is an momentary measure of glycemic control
- Hemoglobin a1c is a measure of glycemic control over the last three months
- There are point of service finger stick tests to measure both

Diabetes Classic complications

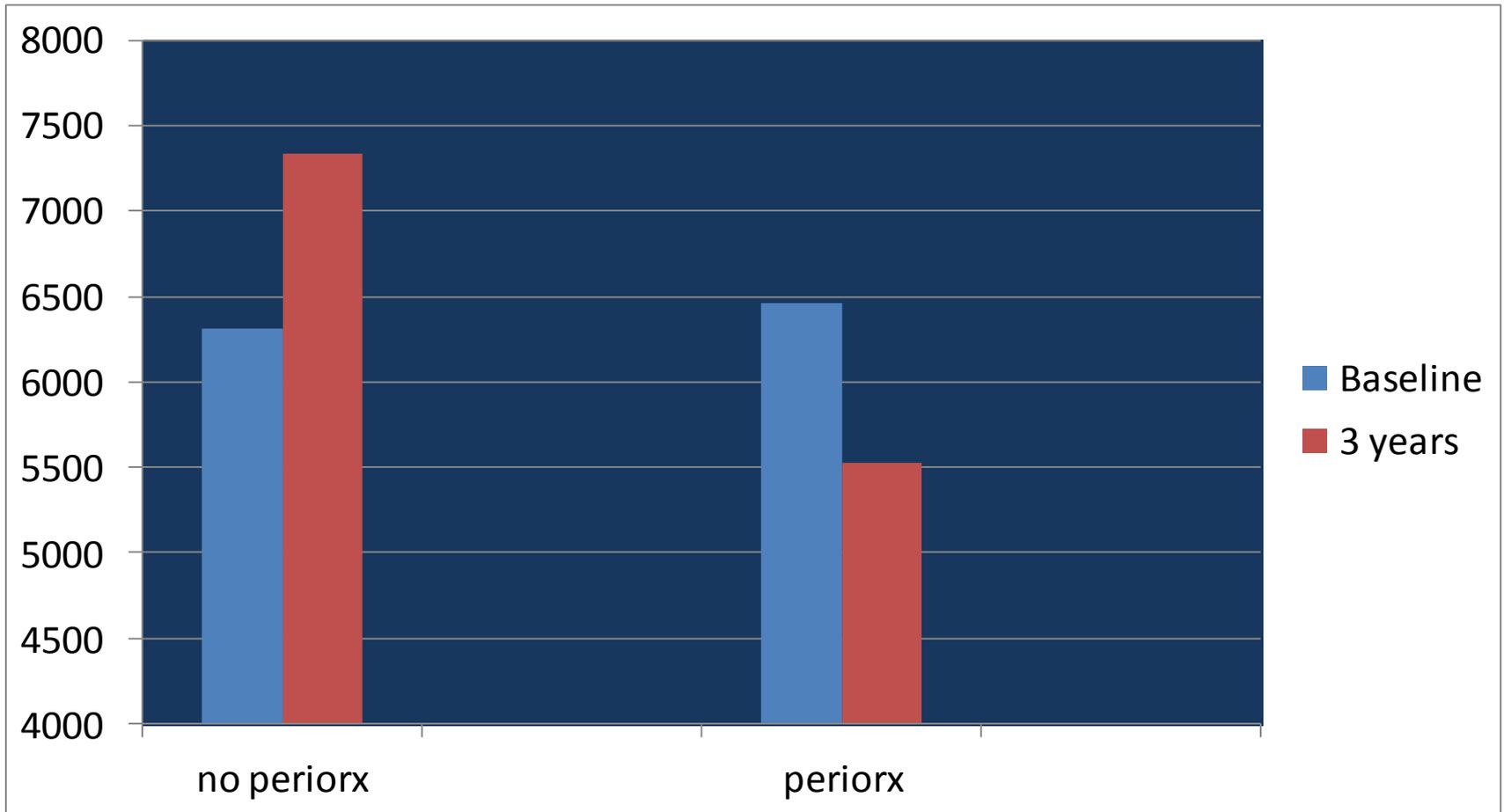
- Retinopathy Blindness
- Nephropathy Renal failure
- Neuropathy
- Macrovascular disease
 - Cardiovascular, Stroke
 - Peripheral
- Altered wound healing

For more information

National Diabetes Information Clearinghouse

niddk.nih.gov/health/diabetes/pubs/dmsats/dmstats/htm#comp

Medical Costs in Diabetics



Cardiovascular disease

- 58 million Americans
- 22% of US population
- 40% of all deaths

Epidemiological Studies

- DeStafano 1993: NHANES
- Population of over 20,000 people
- Median of 14 years

NHANES study

- Subjects with severe periodontal disease were at significantly greater risk of developing
 - Atherosclerosis
 - Myocardial infarction and stroke
- Even when controlled for
 - body mass, age, exercise, serum triglyceride, blood pressure, cholesterol level

Prospective study (Beck)

- Periodontitis significant risk factor for cardiovascular disease morbidity and mortality.
- Fatal coronary heart disease odds 1.6 increased
- Fatal stroke odds 2.1 increased
- controlling for all the traditional cardiovascular risk factors.

What defines a preterm baby?

- A baby...
 - born during or before the 36th week of gestation (one week before full term)

 - and

 - weighing less than 2,500 grams (5 pounds, 8 ounces)

What causes low birth weight ?

- Some of the known causes include:
 - Cigarette smoking
 - Alcohol
 - Multi fetal pregnancies
 - Mother's medical problems
 - An abnormal placenta, uterus or cervix

How can preterm low birth weight be prevented ?

- **All pregnant women should:**
 - Get early , regular prenatal care
 - Consume 0.4 milligrams of folic acid daily
 - Eat a balanced diet
 - Gain enough weight
 - Avoid smoking, alcohol, illicit drug

Facts about preterm low birth weight

- In the United States, 13% of newborns are low birth weight
- 25% of preterm low birth weight cases occur without any known risk factors
- Low birth weight is related to 60% of infant deaths

Pregnancy Gingivitis

- Generalized marginal gingival enlargement
- Incidence: up to 90%
- Altered inflammatory response to plaque



Why is preterm delivery important

- Major cause of neonatal death
- Causes nearly half of long-term neurologic morbidity

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 - Consume 0.4 milligrams of folic acid daily (before and during early pregnancy)
 - Eat a balance diet
 - Gain enough weight
 - Avoid smoking
 - Avoid drinking alcohol /using illicit drugs /prescriptions or over-the-counter drugs not prescribed

How does low birth weight affect a baby ?

- **Low birth weight babies may face serious health problems such as:**
 - Respiratory distress syndrome (RDS)
 - Anemia
 - Jaundice
 - Mental retardation
 - Cerebral palsy
 - Impaired lung function, sight and hearing
 - Intracranial hemorrhage
 - Malnutrition
 - Congestive heart failure

Note

- Of 3,000 pregnant women were studied by our group
- Women with periodontal disease were 3-8x more likely to have spontaneous preterm birth
- Of 28 women who delivered at less than 32 weeks gestations, 24 had periodontal disease

Intervention Studies

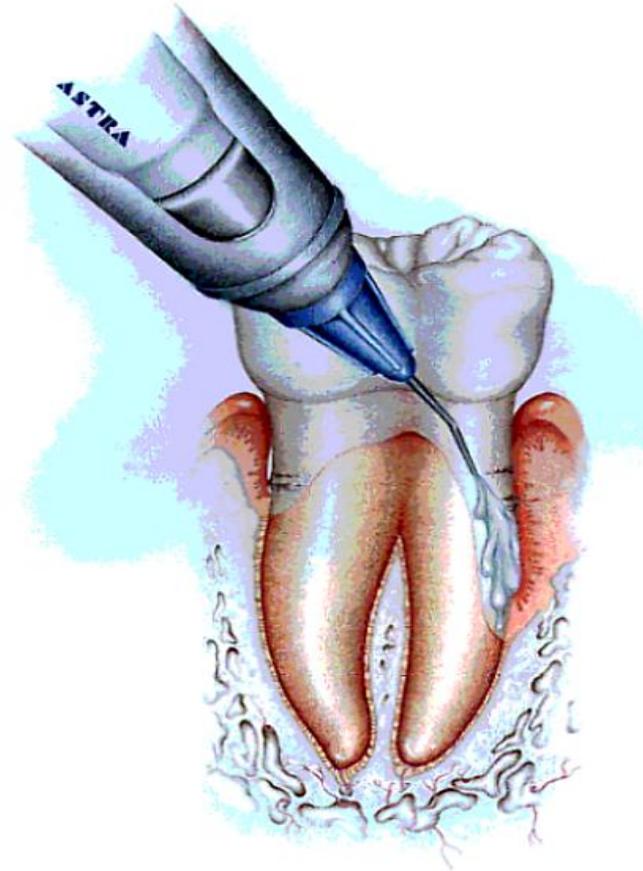
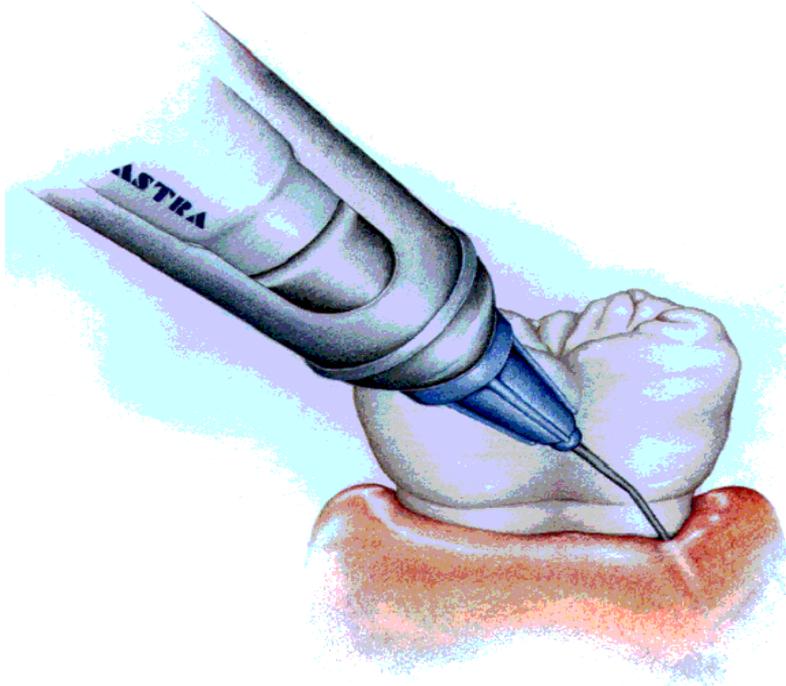
- Can demonstrate that treating periodontitis reduces the risk of preterm birth

Incidence of Preterm Births at Less Than 37 Weeks

- Reference group with periodontitis
13.7%
- Prophy + Placebo
8.9%
- Scaling and root planing + Placebo
4.0%

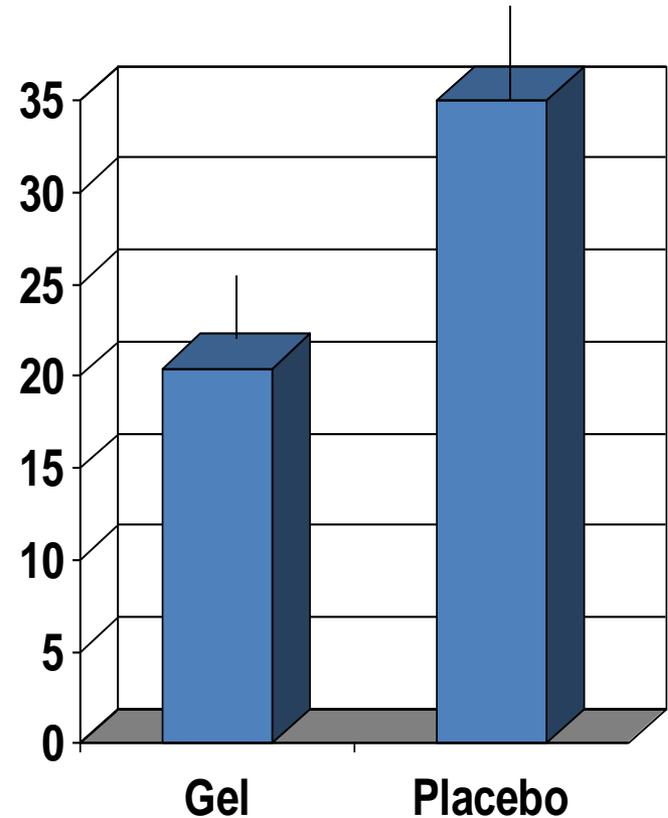
An alternative to anesthetic injections for scaling and root planing

ORAQUIX



Efficacy of Dental Gel

- Multicenter Study
- Patients who require scaling and root planning
- Assess efficacy by Digital Analog Scale



Why the differences in published studies?

- Very different prevalence of more severe periodontal disease
- Very different proportions of African American women in different studies
- How much PD matters?
- Sample size

The success of treatment matters!

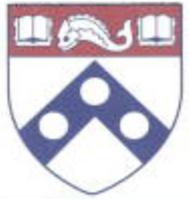


Successful treatment



Unsuccessful treatment

The odds of having a preterm birth was 19.8 times higher in patients whose periodontal treatment was not successful v.s. the patients who were successfully treated ($p < 0.01$).

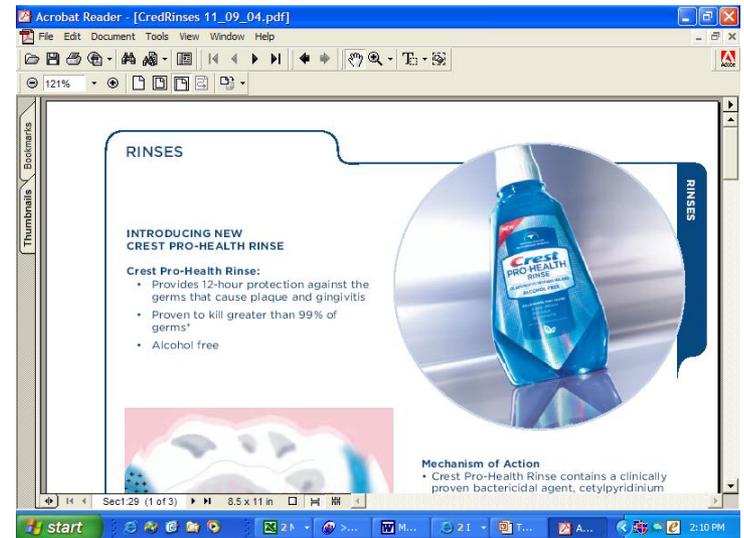


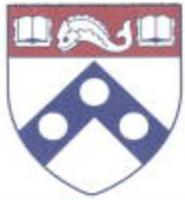
Use of alcohol free antibacterial mouth-rinse is associated with a decreased incidence of PTB

A novel technology

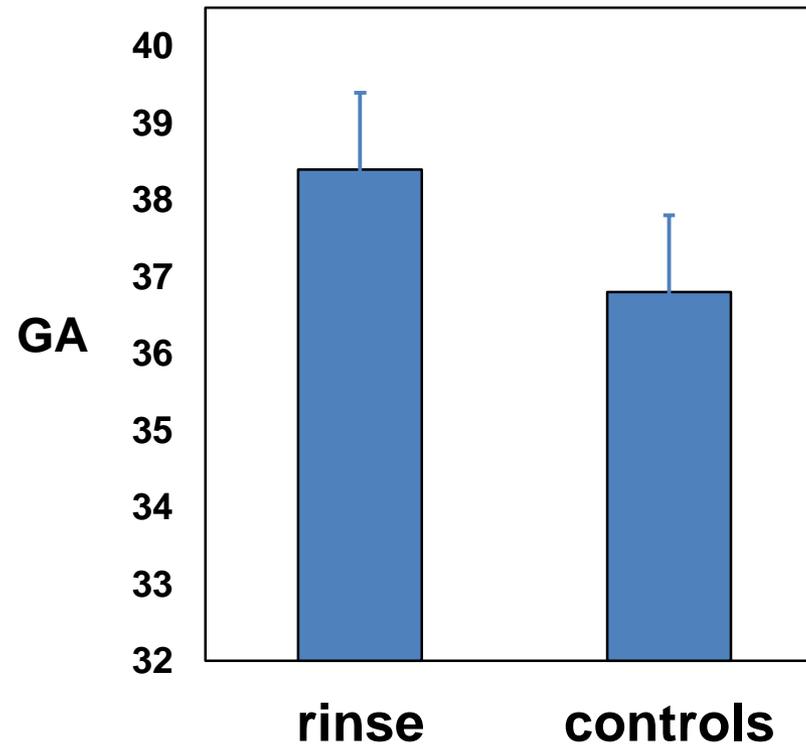
Crest Pro-Health Rinse

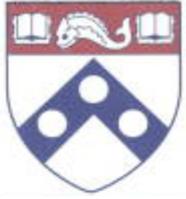
- 0.07% high bioavailable CPC
- Alcohol-free
- Antiplaque
- Antigingivitis
- Fights breath malodor
- 12-hour protection



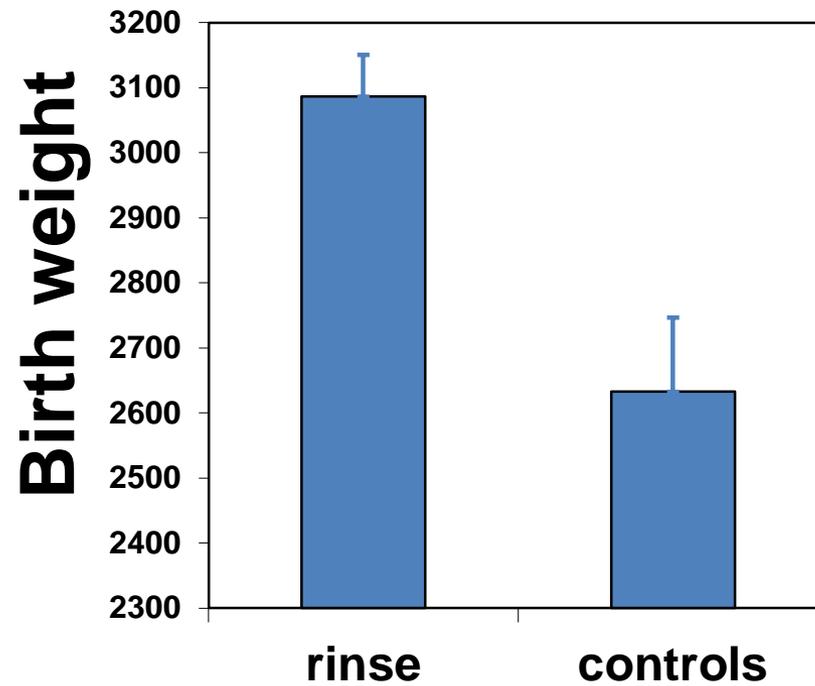


GESTATIONAL AGE AND TREATMENT GROUP ($P < 0.011$)





BIRTH WEIGHT AND TREATMENT GROUP ($P < 0.001$)



Oral Health Care During Pregnancy

*A Summary of a Consensus Development
Expert Workgroup Meeting*



Analgesics in Pregnancy highlighted from the report

Analgesics	
Acetaminophen	<i>May be used during pregnancy.</i>
Acetaminophen with Codeine, Hydrocodone, or Oxycodone	
Codeine	
Meprobidne	
Morphine	
Aspirin	<i>May be used in short duration during pregnancy. Avoid in 3rd trimester.</i>
Ibuprofen	<i>May be used in short duration during pregnancy; do not use for >48–72 hours. Avoid in 3rd trimester.</i>
Naproxen	

Antibiotics in Pregnancy highlighted from the report

Antibiotics	
Amoxicillin	May be used during pregnancy.
Cephalosporins	
Clindamycin	
Metronidazole	
Penicillin	
Avelox	Avoid during pregnancy.
Ciprofloxacin	
Clarithromycin	
Levofloxacin	
Tetracycline	Never use during pregnancy.

Anesthetics and OTC Drugs in Pregnancy - highlighted from the report

Anesthetics	Consult with a prenatal care health professional if using anesthetics other than a local with epinephrine block or infiltration (e.g., intravenous sedation or general anesthesia).
Local anesthetics (Bupivacaine, Lidocaine, Meprvacaine)	May be used during pregnancy.
Nitrous oxide (30%)	May be used during pregnancy when topical or local anesthetics are inadequate. Pregnant women require lower levels of nitrous oxide to achieve sedation; consult with prenatal care health professional.
Over-the-Counter Antimicrobials	
Cetylpyridinium chloride mouth rinse	May be used during pregnancy.
Chlorhexidine mouth rinse	
Xylitol	

Report on Dental Treatment in Pregnancy

- Webpage:

http://www.mchoralhealth.org/materials/consensus_statement.html

- PDF:

<http://www.mchoralhealth.org/PDFs/OralHealthPregnancyConsensus.pdf>

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Osteoporosis

- Loss of bone density
- Propensity to fracture
 - Especially,
 - Hips
 - Wrist
 - Spine
- May result in widows hump

Risk factors for Osteoporosis

- Low peak bone mineral density
- Low body mass index
- Diet: insufficient calcium 1000-1500mg/day
- Women
- Postmenopausal
- Lack of Estrogen
- Smoking

Risk factors for Osteoporosis

- Drugs
 - Corticosteroids
 - Possible to lose 10% of bone mineral in one years
 - Cytotoxic Drugs
 - Estrogen antagonists
- Lack of exercise
- Propensity to fall

Periodontitis and Osteoporosis

- There is an association between basal bone density and
- Bone mineral density at the hip
- Sites with osteoporosis and periodontitis have the highest rate of bone loss

What to do?

- Prevention, prevention, prevention
 - Include questions on osteoporosis in the medical history
 - Educate about diet, exercise, etc.
 - Refer for treatment
- Prevent and treat periodontal disease

Prevention of osteoporosis

- Education
- Attain sufficient peak bone mass
 - Calcium and milk
 - Avoid soda
 - Avoid smoking
- Attain sufficient bone mass
- Exercise
- Appropriate drug treatment

Pharmacologic approaches

- Estrogens
- Nasal calcitonin
- Bisphosphonates
 - E.g. alendronate, risendronate
- Designer estrogens
- PTH (daily injections)
- Prolia

Do oral bisphosphonates cause implant failure?

- 100 consecutive patients taking bisphosphonates for at least three years prior to implant placement for osteoporosis
- 100 controls not taking bisphosphonates
- Tracked for at least 5 years
- Looked for evidence of
 - implant loss, loss of >2mm bone
 - mobility
 - ONJ
- **NO EVIDENCE OF BONE LOSS OR ONJ**