

## ARIC Manuscript Proposal # 861

PC Reviewed: 02/13/02

Status: A

Priority: 2

SC Reviewed: 02/14/02

Status: A

Priority: 2

**1.a. Full Title:** Relationships between periodontal attachment loss, tooth loss, edentulism and cardiovascular disease

**b. Abbreviated Title (Length 26 characters):** Periodontitis-tooth loss & CVD

**2. Writing Group (list individual with lead responsibility first):**

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**3. Timeline:** Data analysis completed by Feb 15, 2002, manuscript completed by March 1, 2002, submitted for ARIC review and then publication by March 15, 2002

**4. Rationale:** A few publications have found that tooth loss and total tooth loss (edentulism) are associated with CHD. If periodontal disease is a risk factor for CHD, then why do people who are edentulous have high CHD rates? Tooth loss is a large problem for all epidemiology studies of dental disease. In prevalence studies, there almost always is no information on why people lost teeth (most common reasons are dental caries, periodontal disease, trauma, and dentists extracting them for prosthetic rehabilitation reasons). In longitudinal studies, the extent of periodontal disease often decreases over time because individuals lose teeth most affected by periodontal disease. ARIC visit 4 data contains information on CVD outcomes for both dentate and edentulous participants and likely will provide some insight into the relationships between periodontal disease, tooth loss and CVD outcomes on a cross-sectional basis.

**5. Main Hypothesis/Study Questions:** It has been our hypothesis that some individuals present with a hyper-inflammatory phenotype and that these individuals are more likely to have extensive periodontitis and thus be more likely to lose teeth and become edentulous. While being edentulous removes the oral source of inflammation, these individuals would respond in a hyper-inflammatory manner to a variety of stimuli and would still be at risk for CHD due to inflammation. Of course there often are dietary changes that accompany edentulism that also may contribute to CHD. We already know from previous analyses that edentulous participants in ARIC have a high prevalence of CHD. We hypothesize that dentate individuals with high levels of tooth loss and high levels of attachment loss will have a higher prevalence of CHD than

individuals with low levels of tooth loss and attachment loss. We also hypothesize that CHD rates are more strongly associated with attachment loss levels than with tooth loss. Further, we extend these same two hypotheses to IMT and carotid calcification determined by acoustic shadowing, two ARIC subclinical measures of atherosclerosis.

- 6. Data (variables, time window, source, inclusions/exclusions):** All data needed are currently available to us. We would use all individuals with a visit 4 periodontal examination and edentulous individuals. Non African-Americans and non-whites will be excluded due to low numbers as well as African-Americans in Mn and Washington Co. The main exposure variable will be 5 attachment loss (AL)-tooth loss (TL) categories: LoAL-LoTL (referent group); LoAL-HiTL, Hi AL-LoTL; HiAL-HiTL; and edentulous (no natural teeth and no implants). Three outcome variables will be used: CHD (yes-no); Carotid calcification (individuals with acoustic shadowing and plaque vs. individuals who have no positive findings for arterial plaque or acoustic shadowing) and IMT (continuous). Potential confounding variables and control variables will include age, gender, race/center, education level, income level, smoking status in 5 categories (current heavy, former heavy, current light, former light, and never), hypertension, diabetic status, BMI, triglyceride levels, LDL-c and HDL-C levels. Since tooth loss and periodontal disease also can be influenced by utilization of professional care, we plan to use at least two additional items that may reflect health awareness and SES, such as “having a regular dentist” and “method of payment for medical care”.

**7.a. Will the data be used for non-CVD analysis in this manuscript?** ☐ Yes ☒ No

- b. If Yes, is the author aware that the file ICTDER02 must be used to exclude persons with a value RES\_OTH = “CVD Research” for non-DNA analysis, and for DNA analysis RES\_DNA = “CVD Research” would be used?** ☐ Yes ☐ No  
(This file ICTDER02 has been distributed to ARIC PIs, and contains the responses to consent updates related to stored sample use for research.)

**8.a. Will the DNA data be used in this manuscript?** ☐ Yes ☒ No

- 8.b. If yes, is the author aware that either DNA data distributed by the Coordinating Center must be used, or the file ICTDER02 must be used to exclude those with value RES\_DNA = “No use/storage DNA”?** ☐ Yes ☐ No

- 9. The lead author of this manuscript proposal has reviewed the list of existing ARIC Study manuscript proposals and has found no overlap between this proposal and previously approved manuscript proposals either published or still in active status. ARIC Investigators have access to the publications lists under the Study Members Area of the web site at: <http://bios.unc.edu/units/csc/ARIC/stdy/studymem.html>**

☒ Yes ☐ No