**ARIC Manuscript Proposal #2874**

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| **PC Reviewed: 10/11/16** | **Status: _____** | **Priority: 2** |
| **SC Reviewed: _____** | **Status: _____** | **Priority: ____** |

**1.a. Full Title**: Periodontal and Tooth Profile Classes Predict Periodontal Disease Progression and Tooth Loss

**b. Abbreviated Title (Length 26 characters)**: Periodontitis Prediction

**2. Writing Group**:
Writing group members: Thiago Morelli, Kevin L. Moss, James Beck, John S. Preisser, Di Wu, Kimon Divaris, and Steven Offenbacher

I, the first author, confirm that all the coauthors have given their approval for this manuscript proposal. __TM___ **[please confirm with your initials electronically or in writing]**

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**ARIC author** to be contacted if there are questions about the manuscript and the first author does not respond or cannot be located (this must be an ARIC investigator).
Name:
Address:
Phone: Fax:
E-mail:

NOTE: We are not sure if there is an ARIC investigator who has an interest in this purely dental project. If someone is interested, we are happy to have he/she with us.

**3. Timeline**: 3-6 Months for manuscript draft. Preliminary analysis has already been started.

**4. Rationale**: The development of precise patient stratification that reflects disease patterns may provide the development of tools for accurate estimates of risks. In a previous publication we described the development of data analytical tools using Latent Class Analysis (LCA) that enable the identification and definition of distinct periodontal and tooth profile classes

(PPC/TPC) of individuals utilizing detailed clinical measures at the tooth-level, including both periodontal measurements and tooth loss. This study demonstrated how multiple clinical characteristics could be used to identify and stratify clinically distinct periodontal and tooth profile classes. The method is highly robust with minimal rates of misclassification The LCA method was applied to create 7 periodontal profile classes (PPCs) and individual teeth were scored using 16 different clinical parameters (e.g. gingival inflammation, probing, recession, root caries, etc.) to create 7 classes of teeth (TPC, tooth profile class). Using the 10-year tooth loss data in ARIC we can compute an index of periodontal profile (IPCs) using weights computed from the TPCs within each person level PPC [a 7x7 matrix].

We plan to use both the Dental ARIC and Piedmont Dental Study datasets to determine whether the previously described periodontal and tooth profile classes derived from tooth status patterns predict tooth loss and periodontitis progression over time.

**5. Main Hypothesis/Study Questions**: Periodontal and Tooth Profile Classes provide better prediction models compared to the current CDC/AAP classification system.

**6. Design and analysis (study design, inclusion/exclusion, outcome and other variables of interest with specific reference to the time of their collection, summary of data analysis, and any anticipated methodologic limitations or challenges if present).**
Our analysis will use the use dental clinical measures collected during the Dental ARIC study and ten-year tooth loss as our outcome(s). These variables were collected at ARIC Visit 4 from the Dental Ancillary Study and by telephone interview (10-year tooth loss) completed in 2014. The prediction model will be validated using the Piedmont Dental Study data. The dental team currently has all the dental variables needed for the analysis.

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

**b. If Yes, is the author aware that the file ICTDER03 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? __X__ Yes ____ No**
(This file ICTDER 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 _X___ No**

**8.b. If yes, is the author aware that either DNA data distributed by the Coordinating Center must be used, or the file ICTDER03 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://www.cscc.unc.edu/ARIC/search.php

__X____ Yes _____ No

**10. What are the most related manuscript proposals in ARIC (authors are encouraged to contact lead authors of these proposals for comments on the new proposal or collaboration)?**
There are many manuscript proposals that use dental variables as an exposure including but not limited to #492, 687, 861, 730, 827, 858, 913, 915, 929, 995, 1112, 1284, 1892, 2053 and 1859. An ARIC manuscript proposal search for the word "Periodontitis Prediction" showed no matches. "Tooth Loss" was found in two manuscript proposals but none of the proposals evaluated the risk for tooth loss using the method we are proposing. In addition, the proposals focused on the determination of risk indicators for tooth loss and were not validated in a different population dataset.

**11.a. Is this manuscript proposal associated with any ARIC ancillary studies or use any ancillary study data? __X__ Yes ____ No**

**11.b. If yes, is the proposal**

**_X__ A. primarily the result of an ancillary study (list number* __ 1996.01_)**
**___ B. primarily based on ARIC data with ancillary data playing a minor role (usually control variables; list number(s)* _____ _____ _____)**

*ancillary studies are listed by number at http://www.cscc.unc.edu/aric/forms/

**12a. Manuscript preparation is expected to be completed in one to three years. If a manuscript is not submitted for ARIC review at the end of the 3-years from the date of the approval, the manuscript proposal will expire.**

**12b. The NIH instituted a Public Access Policy in April, 2008** which ensures that the public has access to the published results of NIH funded research. It is **your responsibility to upload manuscripts to PubMed Central** whenever the journal does not and be in compliance with this policy. Four files about the public access policy from http://publicaccess.nih.gov/ are posted in http://www.cscc.unc.edu/aric/index.php, under Publications, Policies & Forms. http://publicaccess.nih.gov/submit_process_journals.htm shows you which journals automatically upload articles to PubMed central.

**13. Per Data Use Agreement Addendum, approved manuscripts using CMS data shall be submitted by the Coordinating Center to CMS for informational purposes prior to publication**. Approved manuscripts should be sent to Pingping Wu at CC, at pingping_wu@unc.edu. I will be using CMS data in my manuscript ____ Yes _**X**_ No.