ARIC MANUSCRIPT PROPOSAL #942

PC Reviewed: **06/03/03**	**Status:**	**A**	**Priority:**	**2**
SC Reviewed: 06/19/03	**Status:**	**A**	**Priority:**	**2**

1a. Full Title:

Neighborhood Disadvantage and Periodontal Disease

b. Abbreviated Title:

Neighborhood Disadvantage and Periodontal Disease

2. Writing Group

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3. Timeline

Submit proposal to Publications Committee: June 2003

Complete Analysis: August 2003

Submit draft to Publications Committee: October 2003

4. Rationale

Differences in periodontal diseases by socioeconomic status (SES) have been reported for years.

[1-6] People with lower SES are more likely to have periodontal diseases than their higher SES

peers. [4, 7-12] However, socioeconomic indicators have rarely been investigated as the main independent covariates. Place of residence may affect access to care. Suburbanites and persons living in the Northeast, Midwest, and the West are the most frequent users of dental services in the in the US. The South has the lowest level of utilization of dental care.[13] The distribution of dental professionals across the US influences the observed geographic differential access and use of dental services. This distribution is influenced by the socioeconomic characteristics of the geographic area. Therefore, it is possible that neighborhood socioeconomic environment could have an effect on periodontal disease independent of individual's socioeconomic indicators and perhaps a combined effect with individuals SES (i.e., a low-income individual who lives in a disadvantaged neighborhood could have worse periodontal conditions than a low-income peer who lives in an advantaged neighborhood). In addition to indicators of access to care, area-based socio-economic indicators are by themselves markers of socio-economic position, with well-documented associations to a variety of measures of wealth and economic deprivation. It is therefore possible that neighborhood disadvantage can influence the observed extent and severity of periodontal disease through several pathways, not all of which are directly testable in the ARIC data. Nonetheless, the Atherosclerosis Risk in Communities study affords the opportunity to investigate a) the independent and combined effect of individual-level education, income and occupation on periodontal disease before and after controlling for traditional risk factors; b) the effect of neighborhood socioeconomic conditions before and after controlling for individual-level socioeconomic indicators and other risk factors and c) the joint effect of individual- and neighborhood-level socioeconomic indicators.

5. Main Hypothesis

Individual socioeconomic indicators (i.e. education, income and occupation) will be associated with a greater extent and severity of periodontal disease independent of traditional risk factors.

Area-based indicators of socioeconomic position and economic deprivation will be associated with a greater extent and severity of periodontal disease.The relationship between individual-level socioeconomic indicators and of neighborhood socioeconomic conditions on periodontal disease will be additive.

6. Data

Our analysis will be restricted to the subset of the Dental ARIC examination who received a periodontal examination. Individual-level data will be obtained from the ARIC baseline examination and updated through follow up visit 4 (1996-1998). Information on education, income and occupation will be obtained from the interview questionnaire as well as information on traditional risk factors such as age, race, gender, marital status, diabetes and smoking. Periodontal disease indicators will be obtained from the dental examination. Periodontal disease will be defined using a combination of clinical attachment loss and pocket depth consistent with previous studies using ARIC data.

Neighborhood socioeconomic indicators will be obtained from the 1990 US Census. An index of the neighborhood socioeconomic environment was derived as the sum of the following six variables transformed to z-scores: the median household income; the median value of housing, percent of households receiving interest, dividend or net rental income; percent of adults 25 years of age or older with a high school diploma; percent of adults with completed college education; and percent of employed persons 16 years of age or older in executive, managerial, or professional specialty occupations. Because Blacks and whites were selected from different communities, race-specific tertiles will be created.

Statistical Analysis**.** Because blacks and whites were selected from different geographic areas, all analyses will be race-specific. In addition, analysis will be adjusted for recruitment center. Descriptive statistics for the overall population will be presented. Logistic regression will be

used to estimate the strength of the association between periodontal disease and individual socioeconomic indicators before and after controlling for individual risk factors. In addition, logistic regression will be used to examine the association between periodontal disease and neighborhood socioeconomic conditions before and after controlling for individual socioeconomic indicators and risk factors. The effect of cross-classified categories of individual- and neighborhood-level SES will be examined. Residual correlation between outcomes within neighborhoods will be taken into account using appropriate statistical methods, if necessary.

References

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7.a. Will the data be used for non-CVD analysis in this manuscript? ____ Yes __X_ 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 _X_ 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 _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 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/cscc/ARIC/stdy/studymem.html

__X__ Yes _____ No