ARIC Manuscript Proposal # 1069

PC Reviewed: _03/11/05	**Status: __A__**	**Priority: _2__**
SC Reviewed: _03/14/05__	**Status: __A__**	**Priority: _2__**

1.a. Full Title:
Interlukin-1 beta and prostaglandin E2 levels in gingival crevicular fluid and clinical signs of periodontal disease

b. Abbreviated Title (Length 26 characters):
Interlukin-1 beta, prostaglandin E2 and clinical signs of periodontal disease

2. Writing Group:

Writing group members: Yan Zhong, Gary Slade, James D. Beck, Steve Offenbacher
[NOTE: This manuscript is restricted to periodontal disease. If an ARIC Investigator is interested, they are welcome to join the writing group]

First author: Yan Zhong
Address: Department of Dental Ecology
School of Dentistry, CB#7450
The University of North Carolina
Chapel Hill, NC 27599-7450

Phone: 919-966-6120 Fax: 919-966-6761
E-mail: zhongy@dentistry.unc.edu

Corresponding/senior author (if different from first author correspondence will be sent to both the first author & the corresponding author): James Beck
Address: Department of Dental Ecology
School of Dentistry, CB#7450
University of North Carolina
Chapel Hill, NC 27599-7450

Phone: (919) 966-2787 Fax: (919) 966-6761
E-mail: Jim_Beck@dentistry.unc.edu

3. Timeline:
Submit proposal to Publications Committee: March 2005
Complete Analysis: June 2003
Submit draft to Publications Committee: May 2005

4. Rationale:

Determination of the presence of inflammatory products found in gingival crevicular fluid (GCF) may be of value in evaluating both periodontal disease status and the outcome of periodontal therapy (Alexander et al., 1996). Interleukin-1 beta (IL-1b) and prostaglandin-E2 (PGE2) are known to play a central role in the progress of periodontal destruction and bone resorption. Masada et al. (1990) found that IL-1b was present in inflamed gingival tissues and GCF samples harvested from patients with periodontitis, and another study of 33 patients with untreated periodontitis suggested that mean concentration of GCF IL-1b was a useful predictor of alveolar bone loss (Cavanaugh et al., 1998). A longitudinal study on 41 adult periodontitis patients (Offenbacher et al., 1985) demonstrated that GCF PGE2 levels may be used to indicate and predict periodontal attachment loss.

While previous studies have identified inflammatory indicators associated with periodontitis in patients (Offenbacher et al., 1985; Masada et al., 1990; Alexander et al., 1996; Cavanaugh et al., 1998; McGuire et al., 1999; Kido et al., 1999), little has been done to associate them with clinical signs of periodontal disease in community samples. Also, few studies have considered the potential impact of other factors on the association between clinical signs of periodontitis and inflammatory mediators in the GCF. The ARIC cohort affords an opportunity to a) investigate the association between clinical signs of periodontal disease (i.e., pocket depth (PD), clinical attachment level (CAL), and bleeding on probing (BOP)) and mean concentrations of GCF IL-1b and GCF PGE2 in a community-dwelling population, and 2) evaluate this association after adjusting for covariates associated with systemic inflammatory burden and/or periodontal disease.

5. Main Hypothesis/Study Questions:

GCF IL-1b and GCF PGE2 are associated with clinical signs of periodontal disease in a community-dwelling sample.

The above association exists after adjusting for relevant covariates.

6. Data (variables, time window, source, inclusions/exclusions):

Data were obtained from the Dental Atherosclerosis Risk in Communities study (DARIC). In 1996-98, the DARIC was added as an ancillary cross-sectional study during the fourth ARIC visit when 6,277 ARIC participants aged 52-74 years received an oral examination. This study used information from 6,134 subjects who had complete data from the clinical periodontal assessments and GCF samples.

GCF was collected using Harco Periopaper prior to any probing measurements and was sampled from up to 16 periodontal pockets for each participant (mesiobuccal and distobuccal sites of the two most posterior teeth in each quadrant, excluding third molars). IL-1b and PGE2 concentrations were measured using ELISA. For this study, both concentrations were expressed as the average of sampled sites to create a person-level variable.

Periodontal clinical measurements were made by calibrated examiners and were collected at 6 sites of all teeth for each subject. This analysis only considered clinical measurements at the sites where GCF samples were collected. Summary variables were computed for maximum pocket depth (MaxPD), maximum clinical attachment level (MaxCAL) and presence/absence of bleeding on probing (BOP) for each person.

Potential covariates such as sociodemographic variables and measures associated with systemic inflammatory burden and/or periodontal disease were obtained from DARIC.

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 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

However, the participants were also consented for this study.
(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://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 no other manuscript proposals addressing this subject.

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* __13_____)
___ B. primiarly 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/

12. 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.