Topic: Periodontal disease, the oral microbiome, and cancer risk in the OsteoPerio Study

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Periodontal disease, involving chronic polymicrobial infection and inflammation of gum tissue, is common in elderly women. Epidemiological studies have suggested a positive link between periodontal disease and risk of certain cancers. The mechanisms may involve dissemination of oral bacteria, their toxins, and inflammatory factors to extra-oral sites, as well as the subsequent modulation of host cell environment and function. However, research utilizing valid and reliable measures of periodontal disease to assess its relationship with cancer risk is limited. Moreover, the mechanisms underlying the relationship, such as the role of oral bacteria in carcinogenesis, remain unclear and need further investigation.

The Buffalo Osteoporosis and Periodontal Disease (OsteoPerio) Study is an ancillary study to the WHI-OS. The baseline session of the Buffalo OsteoPerio Study was conducted between 1997 and 2001, which concurred with or was very close to the WHI-OS third year clinic visit. The 1,362 enrolled participants were asked to complete all WHI-OS questionnaires, an additional OsteoPerio Study baseline questionnaire focusing on oral health, a medication inventory, as well as a comprehensive oral examination. These women were later re-recruited for the Year-5 OsteoPerio Follow-up Study (2002-2005), and are currently being invited back for the Year-15 OsteoPerio Follow-up Study (2014-2017). Blood, saliva, and subgingival plaque samples have been collected and frozen from baseline and Year-5 post-baseline visits. More samples in addition to those three types are being collected from the Year-15 post-baseline visit.

The OsteoPerio Study provides ample resources that allow researchers to investigate the longitudinal relationships among periodontal disease, the oral microbiome, and disease outcomes. The objectives of this presentation focus on cancer, and include:

1. Summarization of recent publications regarding associations among clinically measured periodontal disease severity indicated by alveolar bone height loss, specific periodontal pathogens and cancer.

2. Description of ongoing studies on the oral microbiome composition, and how it may vary by periodontal disease and cancer status.

3. Discussion of expanding sample collection to analyze the microbiome at other body sites (e.g. stool, skin and etc.), and using these data to investigate the role of the microbiome in other conditions, including systemic inflammation and cardiovascular disease.