Regional Epidemiologic Assessment of Prevalent Periodontitis using an Electronic Health Record System

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Objective: The purpose of this study was to describe an oral health surveillance platform that queries a clinical/administrative data warehouse to estimate the regional prevalence of periodontitis.

Methods: A cross-sectional analysis was performed using electronic health records (EHR) data collected 01/01/2006–12/31/2010 from the Marshfield Epidemiologic Study Area. The sample was drawn from the rural Ladysmith, WI area (~13,000 people), which is primarily served by Marshfield Clinic. Eligibility criteria were: (1) home address in the 54848, 54526, 54731, 54530, 54819, or 54563 zip codes, (2) age 25-64 years, and (3) ≥1 Marshfield Dental Clinic comprehensive exam. The outcome of interest was prevalent periodontitis and was established using two independent methods. The first method utilized an algorithm that considered clinical attachment loss and probe depth to identify moderate and severe periodontitis cases, consistent with established national definitions. The second method was based on standardized current dental terminology (CDT) codes related to periodontal treatment procedures. Prevalence estimates were direct age-standardized to the year 2000 U.S. census estimates.

Results: Of the 7,676 eligible individuals in the region, 2,056 (27%) had ≥1 comprehensive exam and thus were included in the analytical sample. Based on the AAP/CDC method, the prevalence of moderate periodontitis was 373/1,000 males, and 285/1,000 females. The prevalence of severe periodontitis was 33/1,000 males, and 24/1,000 females. The age standardized prevalence of moderate or severe periodontitis (combined) was 407/1,000 males, and 308/1,000 females. Combined moderate/severe prevalence estimates were somewhat lower using the CDT code method, where the prevalence of moderate/severe periodontitis was 348/1,000 males, and 269/1,000 females.

Conclusion: There was a general pattern of increased prevalence and severity of periodontitis with increased age. The prevalence of periodontitis in this area was consistent with national estimates, but the tested methodology highlighted the need to address some potential forms of sample selection bias in future EHR-based periodontitis research. As EHR use increases in dental systems around the country, the methods outlined here could serve to further refine oral health surveillance systems in general, thereby informing dental epidemiology methods and the evaluation of related intervention outcomes.

Acknowledgements: This study was supported in part by funds from Marshfield Clinic Research Foundation, a grant from Delta Dental of Wisconsin and by grant 1UL1RR025011 from the Clinical and Translational Science Award (CTSA) program of the National Center for Research Resources, National Institutes of Health. The authors thank Ms. Crystal Gumz for her assistance in the preparation of this poster.