

**ABSTRACT**

# Use of syndromic surveillance systems for oral health surveillance

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**Objective**

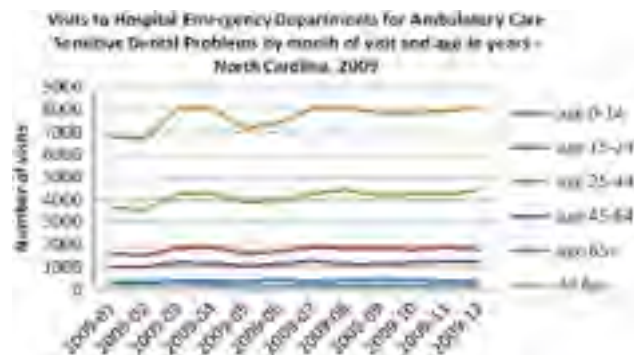
This paper describes use of national and state syndromic surveillance systems for monitoring and evaluating usage of hospital emergency departments for ambulatory care sensitive dental problems.

**Introduction**

National and state surveillance systems for oral health have relied on sample-based screenings and self-reported surveys.<sup>1</sup> Recent publications suggest the need and potential for use of data from syndromic surveillance systems and insurers to monitor indicators of oral health status, utilization of care, and costs of treatment.<sup>2,3</sup> Few consensus indicators for oral health derived from these data sources exist, with the exception of a set of five ICD-9 codes comprising ambulatory care sensitive dental problems (ACS-DP).<sup>4</sup> This paper describes North Carolina's Disease Event Tracking and Epidemiologic Collection Tool (NC DETECT) data analyzed within CDC's BioSense System to report state and county population-based rates of hospital emergency department (ED) utilization for ACS dental conditions.

**Methods**

The total number of ED visits to facilities reporting to NC DETECT and the number of visits containing ICD-9 codes 521, 522, 523, 525, and 528 in any of 11 final diagnosis fields were tabulated for 2009. These ICD-9 codes are related to tooth decay, gum diseases, and oral abscesses. Visit records were deduplicated by a system generated unique identifier. The number of ED visits for ACS-DP was tabulated by unique visitor and percentage of repeat visits was calculated. NC DETECT is a statewide early event detection system with 112 out of 112 24/7 EDs reporting in 2009, allowing population-based rates of ED utilization for ACS-DP. Rates per 10,000 population were calculated for the state of North Carolina and each of the 81 counties where facilities are located. Statewide population rates were age adjusted to the NCHS



**Figure 1** Monthly plot of visits to hospital emergency departments for ambulatory care sensitive dental problems by age – North Carolina, 2009.

2000 standard population. County rates may include visits by patients residing in other counties.

**Results**

County rates per 10,000 population ranged from 2.2 to 3627.7 (median 105.3), with statewide rate of 114.5 (112.2 age adjusted). The greatest utilization was among 25–44 year olds (Figure 1). More detailed results will address the burden of repeat visits and regional and coverage-related effects.

**Conclusions**

The NC DETECT and CDC BioSense syndromic surveillance systems could be considered for routine surveillance of emergency department use for ambulatory care sensitive dental conditions. Population-based rates can be calculated for areas with high-population coverage among reporting hospital systems; visit-based rates can be calculated for all participating hospital systems.

**Acknowledgements**

This paper was presented as an oral presentation at the 2010, International Society for Disease Surveillance

Conference, held in Park City, Utah, USA on 1–2 December 2010.

## References

- 1 Malvitz DM, Barker LK, Phipps KR. Development and status of the National Oral Health Surveillance System. *Prev Chronic Dis* 2009;6. [http://www.cdc.gov/pcd/issues/2009/apr/08\\_0108.htm](http://www.cdc.gov/pcd/issues/2009/apr/08_0108.htm).
- 2 Quiñonez C, Gibson D, Jokovic A, Locker D. Emergency department visits for dental care of nontraumatic origin. *Community Dent Oral Epidemiol* 2009;37:366–71.
- 3 Cohen LA, Bonito AJ, Eicheldinger C, Manski RJ, Macek MD, Edwards RR, *et al.* Comparison of patient visits to emergency departments, physician offices, and dental offices for dental problems and injuries. *J Public Health Dent* 2010 [e-pub ahead of print].
- 4 Michael Millman (ed). Committee on Monitoring Access to Personal Health Care Services, Institute of Medicine. Access to Health Care in America 1993. National Academy Press: Washington, DC, p 221.