Does Restriction of Public Health Care Dental Benefits Affect the Volume, Severity, or Cost of Dental-Related Hospital Visits?

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Purpose: On July 1, 2012, the Illinois legislature passed the Save Medicaid Access and Resources Together (SMART) Act, which restricts adult public dental insurance coverage to emergency-only treatment. The purpose of this study was to measure the effect of this restriction on the volume, severity, and treatment costs of odontogenic infections in an urban hospital.

Materials and Methods: A retrospective cohort study of patients presenting for odontogenic pain or infection at the University of Illinois Hospital was performed. Data were collected using related *International Classification of Diseases, Ninth Revision* codes from January 1, 2011 through December 31, 2013 and divided into 2 cohorts over consecutive 18-month periods. Outcome variables included age, gender, insurance status, oral and maxillofacial surgery (OMS) consultation, imaging, treatment, treatment location, number of hospital admission days, and inpatient care level. Severity was determined by the presence of OMS consultation, incision and drainage, hospital admission, and cost per encounter. Hospital charges were used to compare the cost of care between cohorts. Between-patients statistics were used to compare risk factors and outcomes between cohorts.

Results: Of 5,192 encounters identified, 1,405 met the inclusion criteria. There were no significant differences between cohorts for age ($P = .28$) or gender ($P = .43$). After passage of the SMART Act, emergency department visits increased 48%, surgical intervention increased 100%, and hospital admission days increased 128%. Patients were more likely to have an OMS consult (odds ratio [OR] = 1.42; 95% confidence interval [CI], 1.11-1.81), an incision and drainage (OR = 1.48; 95% CI, 1.13-1.94), and a longer hospital admission ($P = .04$). The average cost per encounter increased by 20% and the total cost of care increased by $1.6 million.

Conclusion: After limitation of dental benefits, there was an increase in the volume and severity of odontogenic infections. In addition, there was an escalated health care cost. The negative public health effects and increased economic impact of eliminating basic dental care show the importance of affordable and accessible preventative oral health care.

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Most often, dental caries or infection can be easily addressed in an outpatient or ambulatory clinic setting. Nevertheless, the lack of adequate dental care for the economically impoverished and uninsured groups is an issue that has drawn considerable and increasing attention. As an alternative to the desirable preventative medicine paradigm, these patients seek emergency care in hospital or urgent care settings. Because of the lack of trained dental professionals and available resources, these patients very often do not receive appropriate comprehensive treatment and this less than ideal treatment carries an inflated cost. In the United States, there are an average of 738,000 visits to the emergency department (ED) annually for dental complaints, with a disproportionate percentage of Medicaid or self-pay patients compared with those with private insurance.[1] In 2006, Nalliah et al[2] found that for dental caries alone there were 330,757 visits to the ED for a total estimated cost of $110 million. Unfortunately, for the US health care system, this is an increasing trend.[3] Coinciding with this trend, the number of patients hospitalized for odontogenic reasons is increasing.[4] Odontogenic infections can progress to extensive multi-space infections requiring surgical intervention and hospitalization and can even result in death from airway compromise or sepsis.[5-7]

It has been well established that preventive dental treatment in outpatient settings is more effective and cost efficient.[1] Griffin et al[8] showed that costs for patients admitted to the hospital were more than 10 times greater than those with similar treatment rendered in an outpatient setting. Similarly, Pettinato et al[9] found greater expenditures by Medicaid for treatment in the ED compared with the cost to Medicaid for providing routine preventive care. However, there have been very few studies that have accurately analyzed the hospital costs associated with these dental infections.[10]

In 2012, the Save Medicaid Access and Resources Together (SMART) Act was passed in Illinois, which eliminated nonemergency adult public dental benefits. The law, which went into effect on July 1, 2012, limited covered dental treatment to emergency-only extractions of a single tooth for adults older than 21 years. There is established evidence that a decrease in public dental insurance coverage for adults increases the number of ED visits for dental-related problems.[11-13] However, based on the deficiencies in the current literature, the authors sought to approach this public policy change by creating a more accurate and complete study design, one that incorporated ED, operating room, and inpatient data.

The purpose of this study was to measure the effect of this restriction on the volume, severity, and treatment costs of odontogenic infections seen in an urban Illinois hospital. The authors hypothesized that after the limitation of adult dental services in Illinois effective July 1, 2012, increases in the number and severity of dental infections in the ED and hospital settings would be seen. Furthermore, the increased use of hospital-based dental care would increase total health care costs. The specific aims of the study were to measure and compare the change in volume, severity, and total cost before and after the passage of legislation that restricted adult public dental health care in Illinois to emergency-only treatment.

Materials and Methods

STUDY DESIGN

This study was approved by the institutional review board of the University of Illinois at Chicago (number 2014-0002). To address the research purpose, the authors designed and implemented a retrospective cohort study. The study population was composed of all patients presenting to the University of Illinois Hospital (UIH) for evaluation and management of dental pain or infection from January 1, 2011 through December 31, 2013. This allowed 36 months of data, which were divided into 2 separate consecutive cohorts of 18 months each. The first 18-month period (cohort 1) occurred immediately before passage of the SMART Act (January 1, 2011 through June 30, 2012). Cohort 2 (July 1, 2012 through December 31, 2013) occurred immediately after.

To be included in the study sample, patients had to present to the UIH ED or as a direct transfer from an outside hospital specifically for a nontraumatic odontogenic complaint, such as pain or swelling. Patients were excluded as study subjects if their visit was not related to an odontogenic complaint, such as headache, temporomandibular joint concerns, or folliculitis, or was related to a noninfectious odontogenic process, such as a benign or malignant tumor or postoperative concern.

VARIABLES

The primary predictor variable was time. The primary outcome variables of the study were the volume of patients with odontogenic pain or infection (number of included patients), severity of the infection (measured by oral and maxillofacial surgery [OMS] consultation, incision and drainage [I&D], hospital admission, and average cost per ED encounter), and overall cost of treatment based on hospital charges for each variable analyzed. In addition to demographic variables (age, gender, and insurance status), additional variables included OMS consultation, radiographic examination (computed tomography [CT] and Panorex radiography), I&D, treatment in the