

A Medicaid Population's Use of Physicians' Offices for Dental Problems

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During any 6-month period in the United States, more than 20 million adults experience pain from toothache.¹ Although physicians may provide care for dental pain, dentists are the usual source of care for definitive treatment.^{2,3} Unfortunately, low-income and minority patients who exhibit the greatest dental need^{1,4–7} also have the poorest access to private oral health care services.^{5,8–10} Individuals who lack a usual source for dental care may visit hospital emergency departments (EDs) or physicians' offices to seek relief for dental pain and related conditions.

In the United States during the period 1992–1999, general visits to EDs increased by approximately 14%.¹¹ Studies have documented the use of EDs for the treatment of dental disease in children.^{12–15} The use of EDs for the treatment of adult dental problems has also received attention.^{3,16–23} Although several authors have discussed the role of medical practitioners in addressing oral health problems,^{24–29} few studies have gathered data on visits to physicians for the treatment and prevention of dental problems.

The role of physicians in the early detection of oral cancer has been examined.³⁰ Several studies have explored patients' use of visits to physicians' offices to obtain treatment for dental problems^{31,32} and preventive oral health services for children.³³ Few studies examining adults' visits to physicians for the treatment of dental emergencies exist. A few studies outside the United States have documented use of medical practitioners for treatment of dental problems.^{34,35} Approximately 0.3% of patients' visits to 30 medical practices in Wales during a 1-year period were for oral problems.³⁴ Another limited study conducted at a hospital ED reported that 41% of patients who had received emergency services for dental problems before visiting the hospital ED had first sought treatment from medical practitioners.³⁵

Objectives. This study evaluated how the elimination of Medicaid reimbursement to dentists for the treatment of adult dental problems affected patients' visits to physicians.

Methods. Data tapes describing physicians' claims for adult Medicaid patients were obtained from the Maryland Medicaid Management Information System. The database contains information on all claims made to Maryland Medicaid, including date, provider, *International Classification of Diseases, Ninth Revision, Clinical Modification Manual* code, and payments.

Results. A total of 5334 individuals made physician's office claims related to dental problems sometime during the 4-year study period. The rate of dental-related claims by physicians decreased by 8% after the policy change.

Conclusions. Visits to physicians' offices decreased even though an increase might have been expected because of the elimination of access to dentists in private practice. Patients might have assumed that if visits to dentists would no longer be paid for, neither would visits to physicians' offices. (*Am J Public Health.* 2003;93:1297–1301)

To gain a better understanding of the role of physicians in the treatment of dental problems, our study examined adult Medicaid patients' visits to Maryland physicians for the treatment of dental problems. In addition to examining visits to physicians in general, we also conducted an analysis of use of physicians before and after a change in the coverage status of Medicaid-eligible adults. Attempting to reduce its dental-related costs, in February 1993 Maryland Medicaid eliminated reimbursement to dentists for adult emergency dental services (routine adult dental services were eliminated in 1976). Reimbursement for visits to physicians and EDs for dental-related problems was not eliminated. To examine the impact of this policy change, physician claims data were analyzed to test the hypothesis that elimination of Medicaid reimbursement to dentists in private practice for the treatment of adult dental problems would result in increased use of physicians for the treatment of dental problems. A previous report described the impact of the policy change on ED claims.²²

METHODS

Our study examined the use of Maryland office-based physicians for the treatment of

mouth pain and infections associated with the teeth and periodontal tissues during a 4-year period. We employed a natural experiment—the change in Medicaid policy on February 16, 1993, that eliminated reimbursement of dentists and their participation in the program—to establish 2 observation periods (preperiod: February 16, 1991, to February 15, 1993; postperiod: February 16, 1993, to February 15, 1995). Our study sample included all adult Medicaid patients (individuals 21 years of age and older) who had used Maryland office-based physicians on a fee-for-service basis during this period.

The data analyzed in this study were abstracted from the Maryland Medicaid Management Information System I. This database contains information on all claims for reimbursement made to Maryland Medicaid, including date, provider, *International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM)*³⁶ code, and claim payments. Published reports were available that contain the average number of monthly Medicaid-eligible patients during the study period (categorized by age, sex, and race).

Dental emergency office-based visits to physicians were identified through use of dental-related *ICD-9-CM* codes. The *ICD-9* codes used in the study were 521.0–521.9

(diseases of hard tissues of the teeth), 522.0–522.9 (diseases of pulp and periapical tissues), 523.0–523.9 (gingival and periodontal diseases), 525.3 (retained dental root), 525.9 (unspecified disorder of the teeth and supporting structures), 873.63 (internal structures of mouth, without mention of complication, broken tooth), and 873.73 (internal structures of mouth, complicated, broken tooth). These codes were considered to be the ones most likely to reflect visits for the treatment of mouth pain and infections associated with the teeth and periodontal tissues. They are the same codes that were used in a previous study of hospital ED utilization.²² ICD-9-CM codes were chosen to select subjects because of the codes' wide usage, standard definitions, and required inclusion for Medicaid reimbursement.

We used descriptive and inferential statistical methods to analyze the data. The office-based physicians' rate of claims for dental problems was estimated by dividing the total number of visits to a physician identified in the claims data set by the total amount of person-time of Medicaid eligibility. Multiple dental visits by an individual were included in the calculation of the rate. Rate ratios were calculated by dividing the rate of dental claims in the period after the Medicaid policy change by the rate of claims before the change. The rate ratios were calculated overall, as well as by age group, sex, and race. P values and confidence intervals for rate ratios were calculated in a standard manner on the basis of the approximate normality of the logarithm of the rate ratios.

RESULTS

Description of ICD-9-CM Codes

Table 1 presents the frequency distribution of the dental-related ICD-9-CM codes used to select the relevant claims from physicians' offices. Up to 2 ICD-9 codes could be submitted for each claim; therefore, there are more codes than claims. Between the pre- and post-period, little change in the codes used by physicians' offices was observed. The most common dental codes associated with claims from physicians' offices were 521.0 (dental caries, 17.8%), 522.5 (periapical abscess, 17.1%), and 525.9 (unspecified disorder of the teeth

TABLE 1—ICD-9-CM Codes Associated With Dental-Related Emergency Office Claims by Physicians Before and After Policy Change: Maryland, 1991–1995

Diagnosis: ICD-9-CM Code	No. of Claims (%)		
	Preperiod	Postperiod	Total
Dental caries: 521.0	596 (15.8)	666 (20.1)	1262 (17.8)
Periapical abscess: 522.5	554 (14.7)	654 (19.7)	1208 (17.1)
Dental disorder, unspecified: 525.9	550 (14.6)	661 (20.0)	1211 (17.1)
Gingival/periodontal disease: 523.0	523 (13.9)	184 (5.6)	707 (10.0)
Chronic gingivitis: 523.1	297 (7.9)	334 (10.1)	631 (8.9)
Hard-tissue disease of teeth: 521.0	246 (6.5)	122 (3.7)	368 (5.2)
Pulp/periapical disease: 522.0	162 (4.3)	107 (3.2)	269 (3.8)
Chronic periodontitis: 523.4	127 (3.4)	49 (1.5)	176 (2.5)
Gingival/periodontal disease, unspecified: 523.9	118 (3.1)	68 (2.1)	186 (2.6)
Acute gingivitis: 523.0	114 (3.0)	130 (3.9)	244 (3.4)
Acute apical periodontitis: 522.4	92 (2.4)	86 (2.6)	178 (2.5)
Acute periodontitis: 523.3	81 (2.2)	114 (3.4)	195 (2.8)
Chronic apical periodontitis: 522.6	80 (2.1)	30 (0.9)	110 (1.6)
Pulpitis: 522.0	73 (1.9)	29 (0.9)	102 (1.4)
Broken tooth: 873.63	67 (1.8)	51 (1.5)	118 (1.7)
Other specified periodontal diseases: 523.8	49 (1.3)	25 (0.8)	74 (1.0)
Hard-tissue disease of teeth, unspecified: 521.9	38 (1.0)	28 (0.9)	66 (0.9)
Radicular cyst: 522.8	20 (0.5)	6 (0.2)	26 (0.4)
Periapical abscess with sinus infection: 522.7	19 (0.5)	11 (0.3)	30 (0.4)
Abrasion of teeth: 521.2	15 (0.4)	2 (0.1)	17 (0.2)
Periodontosis: 523.5	11 (0.3)	14 (0.4)	25 (0.4)
Other and unspecified pulp/periapical disease: 522.9	9 (0.2)	3 (0.1)	12 (0.2)
Abnormal hard tissue-tooth pulp: 522.3	7 (0.2)	29 (0.9)	36 (0.5)
Other specified hard-tissue diseases of teeth: 521.8	6 (0.2)	2 (0.1)	8 (0.1)
Tooth pulp degeneration: 522.2	6 (0.2)	1 (<0.1)	7 (0.1)
Gingival recession: 523.2	6 (0.2)	3 (0.1)	9 (0.1)
Necrosis of tooth pulp: 522.1	5 (0.1)	4 (0.1)	9 (0.1)
Accretions on teeth: 523.6	3 (0.1)	3 (0.1)	6 (0.1)
Excess attrition—teeth: 521.1	1 (<0.1)	10 (0.3)	11 (0.2)
Erosion of teeth: 521.3	1 (<0.1)	0 (0)	1 (<0.1)
Hypercementosis: 521.5	1 (<0.1)	2 (0.1)	3 (<0.1)
Posteruption color change: 521.7	1 (<0.1)	0 (0)	1 (<0.1)
Retained dental root: 525.3	1 (<0.1)	4 (0.1)	5 (0.1)
Broken tooth—complicated: 873.73	1 (<0.1)	4 (0.1)	5 (0.1)
Resorption of teeth: 521.4	0 (0)	1 (<0.1)	1 (<0.1)

Note. ICD-9-CM = International Classification of Diseases, 9th Revision, Clinical Modification.

and supporting structures, 17.1%). Together, they accounted for approximately 52% of all dental claims.

Description of Study Population

The demographic composition of the Medicaid population eligible for inclusion in the study is presented in Table 2. Because the eligibility status of participants could change

over the course of the study period, data are presented in terms of person-years of eligibility. The person-years of eligibility were slightly greater in the preperiod than in the postperiod (406 903 vs 399 953). The demographic profile of the eligible population was very similar in the pre- and postperiod. Considering the entire 4-year study period, the largest percentage of person-years of eligi-

TABLE 2—Person-Years of Medicaid Eligibility, by Period and Subgroup: Maryland, 1991–1995

Subgroup	No. of Person-Years (%)		
	Preperiod (n = 406 903)	Postperiod (n = 399 953)	Total (n = 806 856)
Sex			
Male	113 502 (28)	102 974 (26)	216 477 (27)
Female	293 401 (72)	296 979 (74)	590 380 (73)
Race			
White	168 171 (41)	167 481 (42)	335 652 (42)
Black	220 134 (54)	208 268 (52)	428 403 (53)
Other	18 598 (5)	24 203 (6)	42 801 (5)
Age, y			
21–44	246 832 (61)	239 844 (60)	486 676 (60)
45–64	73 578 (18)	70 003 (18)	143 581 (18)
≥ 65	86 493 (21)	90 106 (23)	176 599 (22)

TABLE 3—Number and Rate of Medicaid Claims From Physicians’ Offices for Dental-Related Emergencies Before and After Policy Change, by Age, Race, and Sex: Maryland, 1991–1995

Group	Preperiod		Postperiod		Postperiod-to-Preperiod Rate Ratio ^a (95% CI)	P
	No. of Claims	Rate of Claims per Person-Year	No. of Claims	Rate of Claims Per Person-Year		
Total	4043	.00994	3652	.00913	0.92 (0.88, 0.96)	.0002
Sex						
Male	1459	.01285	1151	.01117	0.87 (0.80, 0.94)	.0004
Female	2 584	.00881	2501	.00842	0.96 (0.91, 1.01)	.11
Race						
White	1507	.00896	1511	.00902	1.01 (0.94, 1.08)	.85
Black	2336	.01061	1793	.00861	0.81 (0.76, 0.86)	<.0001
Other	200	.01075	348	.01437	1.34 (1.12, 1.59)	.0011
Age, y						
21–44	3116	.01262	2790	.01163	0.92 (0.88, 0.97)	.0017
45–64	867	.01178	759	.01084	0.92 (0.83, 1.01)	.094
≥ 65	60	.00069	103	.00114	1.65 (1.20, 2.27)	.0021

Note. CI = confidence interval.
^aReference period is preperiod.

TABLE 4—Patterns of Dental-Related Emergency Claims by Physicians’ Offices Before and After Policy Change, for Medicaid Participants With at Least 1 Visit to a Physician’s Office: Maryland, 1991–1995

Preperiod	No. of Claims Postperiod	Frequency of Claims	Percentage of All Claims
0	2	316	5.9
0	≥ 3	173	3.2
1	0	2244	42.1
1	1	71	1.3
1	2	22	0.4
1	3	14	0.3
2	0	358	6.7
2	1	16	0.3
2	2	7	0.1
2	≥ 3	9	0.2
≥ 3	0	177	3.3
≥ 3	1	10	0.2
≥ 3	2	8	0.2
≥ 3	≥ 3	13	0.2

bility was shown by females (73%), Blacks (53%), and individuals in the age group 21 to 44 years (60%).

Claims by Physicians’ Offices

In all, 5334 unique individuals had dental-related claims by physicians’ offices for the emergency treatment of dental problems sometime during the 4-year study period. The rate of dental-related claims from physicians’ offices in the pre- and postperiods is presented in Table 3. Overall, claim rates for dental problems in physicians’ offices decreased by

8% after implementation of the policy change. Significant decreases in rates after the policy change were also noted for males (13%), Blacks (19%), and the 21-to-44-year age group (8%). Although the numbers are relatively small, the Other racial group and the 65 years and older age group both displayed significant postperiod rate increases (34% and 65%, respectively).

Pattern of Claims

Table 4 presents the claims pattern over the entire study period for individuals with

any dental-related claims by physicians. Approximately 42% of individuals with at least 1 claim during the 4-year period had 1 claim in the preperiod and no claims in the postperiod. Approximately 36% of those who visited physicians’ offices had no visits in the preperiod and 1 visit in the postperiod. Only about 3% of individuals with claims by physicians’ offices had 1 or more claims in both the pre- and postperiods.

DISCUSSION

Our study has several limitations. Although these results are representative of the adult Medicaid population in Maryland, they may not be generalizable to other states or to a non-Medicaid population. Additionally, we cannot be certain that the discontinuation of reimbursement of dentists was responsible for all observed changes in dental-related office claims by physicians. Other factors not evaluated may have contributed. For example, administrative changes or other economic factors not measured in this study may have played a role. Furthermore, the

use of *ICD-9-CM* codes instead of progress note abstraction may have resulted in some misclassification of dental-related problems. *ICD-9-CM* code accuracy is only as reliable as the initial diagnostic interpretation and code selection. Nevertheless, these data are useful and allow an analysis of utilization changes caused by an explicit policy change. The data include all adults covered by Medicaid during the study period and contain sufficient numbers to assess demographic differences. Additionally, the inclusion of all Maryland physicians and dental-related patient claims occurring over a 4-year period helps to ensure the validity of the results.

Nationally, in 1995 there were approximately 700 million patient visits to physicians' offices, representing 81% of all ambulatory visits in the United States. Only 0.2% of these visits had a principal diagnosis relating to diseases of the teeth and supporting structures.³⁷ In our study of Maryland adult Medicaid-eligible patients, an annual average of approximately 1924 claims by physicians' offices relating to dental emergencies during each study year was observed.

After the elimination of reimbursement of dentists for the treatment of dental problems, there was an 8% decrease in the claims rate for dental-related visits to physicians' offices. This decrease is in contrast to a 12% increase in the dental-related claims rate for hospital ED visits in the period following the policy change.²² An increase in visits to physicians' offices might have been expected in the period following the policy change because of the decrease in access to dentists in private practice that was caused by the elimination of reimbursement of dentists. It is possible that patients might have assumed that if visits to dentists would no longer be covered by insurance, neither would dental-related visits to physicians' offices.

Although the rate of claims by physicians' offices did not increase after the policy change, the rate was greater than that reported in the companion study of hospital EDs during the same time frame.²² The overall claims rate per person-year of Medicaid eligibility for dental-related claims by physicians' offices was 95% greater than the ED claims rate during the preperiod but 63% greater than the ED claims rate during the

postperiod. Overall, Medicaid-eligible patients with dental emergencies were more likely to visit physicians' offices, but the difference in the number of visits was smaller in the postperiod because of the increase in visits to EDs and the decrease in visits to physicians' offices. Thus, there was a shift to ED use. Nevertheless, it appears that individuals who lack a usual source of dental care have better access to physicians' offices than to hospital EDs for the treatment of dental-related problems.

Comparisons of the dental-related *ICD-9-CM* codes in our study with those reported elsewhere²² for hospital ED visits reveal that physicians were somewhat more precise in describing dental problems. However, the general pattern of codes was similar in both studies. Thus, it does not appear that the nature of the patient's oral problem was a deciding factor in the decision to seek care from a physician as opposed to an ED.

Our study raises 2 questions. The first deals with the issue of access to emergency dental services. During the 2 years before the policy change, more than 40 000 Maryland adults receiving Medicaid dental benefits made at least 1 emergency visit to a dentist's office, resulting in more than 60 000 claims for tooth extractions.²² The results of our study of dental-related claims by physicians' offices and those reported elsewhere for claims by hospital EDs²² demonstrate that an increase in visits to these treatment sites did not compensate for the elimination of treatment previously available in dentists' offices. Further research is needed to explore how these patients managed their dental emergencies.

Second, this study highlights the role of office-based physicians in providing treatment for dental emergencies. Although physicians can provide such care, generally they do not provide definitive treatment. Thus, physicians' offices may not be the most appropriate site for the treatment of dental emergencies. Physicians generally have received minimal training in the management of dental problems.^{3,15,38} As previously mentioned, several authors have attempted to provide guidance to physicians in this area.²⁴⁻²⁹ Recognizing this training deficiency, the General Medical Services Committee of the British Medical Association published guidelines on the manage-

ment of dental problems.³⁹ Further research is required to evaluate the adequacy of office-based physicians' management of dental emergencies. Such studies will help to determine the need for changes in undergraduate and graduate medical education, as well as identify the necessity for continuing education courses to address this topic. ■

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This article was accepted December 9, 2002.

Contributors

L. A. Cohen conceived and directed the project. R. J. Manski assisted with project design and management. L. S. Magder was responsible for statistical analysis and assisted with project design. C. D. Mullins was responsible for economic analysis and assisted with project design. All of the authors helped to interpret the findings and reviewed drafts of the article.

Acknowledgment

This project was supported by grant R01 HS10129 from the Agency for Healthcare Research and Quality.

The assistance of the Data Management and Analysis Division, Office of Planning, Development and Finance, Maryland Department of Health and Mental Hygiene is gratefully acknowledged.

Human Participant Protection

This project was reviewed by the institutional review board of the University of Maryland at Baltimore and was determined to be exempt from the approval process, according to the Office for Protection From Research Risks, Department of Health and Human Services (45 CFR 46.101.b (4)).

References

1. Lipton JA, Ship JA, Larach-Robinson D. Estimated prevalence and distribution of reported orofacial pain in the United States. *J Am Dent Assoc.* 1993;124:115-121.
2. Burgess J, Byers MR, Dworkin SF. Pain of dental and intraoral origin. In: Bonica, JJ, ed. *The Management of Pain*, Vol 1. Philadelphia, Pa: Lea & Febiger; 1990.
3. Pennycook A, Makower R, Brewer A, Moulton C, Crawford R. The management of dental problems presenting to an accident and emergency department. *J R Soc Med.* 1993;86:702-703.

4. *Health Status of Minorities and Low-Income Groups*. 3rd ed. Washington, DC: Health Resources and Services Administration; 1991.
5. *Oral Health of United States Adults: The National Survey of Oral Health in US Employed Adults and Seniors 1985–1986. National Findings*. Washington, DC: National Institute of Dental Research; 1987. NIH publication 87-2868.
6. *Third National and Nutrition Examination Survey (NHANES III)* [reference manuals and reports on CD-ROM]. Hyattsville, Md: National Center for Health Statistics; 1996.
7. Vargas CM, Macek MD, Marcus SE. Sociodemographic correlates of tooth pain among adults: United States, 1989. *Pain*. 2000;85:87–92.
8. *Oral Health in America: A Report of the Surgeon General*. Rockville, Md: National Institute of Dental and Craniofacial Research; 2000.
9. National Center for Health Statistics. Preliminary data from the Centers for Disease Control and Prevention. *Month Vital Stat Rep*. 1997;46(1)(suppl 2).
10. American Dental Association (ADA), Survey Center. *Key Dental Facts*. Chicago, Ill: American Dental Association; 1997.
11. Burt CW, McCaig LF. Trends in hospital emergency department utilization: United States, 1992–99. National Center for Health Statistics. *Vital Health Stat 13*. 2001;No. 150.
12. Battenhouse MR, Nazif MM, Zullo T. Emergency care in pediatric dentistry. *J Dent Child*. 1988;55:68–71.
13. Majewski RF, Snyder CW, Bernat JE. Dental emergencies presenting to a children's hospital. *J Dent Child*. 1988;55:339–342.
14. Zeng Y, Sheller B, Milgrom P. Epidemiology of dental emergency visits to an urban children's hospital. *Pediatr Dent*. 1994;16:419–423.
15. Graham DB, Webb MD, Seale NS. Pediatric emergency room visits for nontraumatic dental disease. *Am Acad Pediatr Dent*. 2000;22:134–140.
16. Silverman S, Eisenbud L. Patterns of referral of dental patients to the emergency room. *J Hosp Dent Pract*. 1976;10:39–40.
17. Berger JL, Mack D. Evaluation of a hospital dental emergency service. *J Hosp Dent Pract*. 1980;14:100–104.
18. Sonis ST, Valachovic RW. An analysis of dental services based in the emergency room. *Special Care Dent*. 1988;8:106–108.
19. Gibson GB, Blasberg B, Hill SJ. A prospective survey of hospital ambulatory dental emergencies, I: patient and emergency characteristics. *Special Care Dent*. 1993;13:61–65.
20. Cohen LA, Manski R, Hooper FJ. Does the elimination of Medicaid reimbursement affect the frequency of emergency department dental visits? *J Am Dent Assoc*. 1996;127:605–609.
21. Manski R, Cohen LA, Hooper FJ. Use of hospital emergency rooms for dental care. *Gen Dent*. 1998;46:44–47.
22. Cohen LA, Manski RJ, Magder LS, Mullins CD. Dental visits to hospital emergency departments for adults receiving Medicaid: assessing their use. *J Am Dent Assoc*. 2002;133:715–724.
23. Waldrop RD, Ho B, Reed S. Increasing frequency of dental patients in the urban ED. *Am J Emerg Med*. 2000;18:687–689.
24. Baker B. Emergency dental treatment for the family physician. *Can Fam Physician*. 1987;33:1521–1524.
25. Comer RW, Caughman WF, Fitchie JG, Gilbert BO. Dental emergencies. Management by the primary care physician. *Postgrad Med*. 1989;85:63–66, 69–70, 77.
26. Clark MM, Album MM, Lloyd RW. Medical care of the dental patient. *Am Fam Physician*. 1995;52:1126–1132.
27. Pyle MA, Terezhalmay GT. Oral disease in the geriatric patient: the physician's role. *Cleve Clin J Med*. 1995;62:218–226.
28. Venugopal T, Kulkarni VS, Neruker RA, Patnekar PN. Role of pediatrician in dental caries. *Indian J Pediatr*. 1998;65:85–88.
29. Drum MA, Chen DW, Duffy RE. Filling the gap: equity and access to oral health services for minorities and the underserved. *Fam Med*. 1998;30:206–209.
30. Goodman HS, Yellowitz JA, Horowitz AM. Oral cancer prevention; the role of family practitioners. *Arch Fam Med*. 1995;4:585–586.
31. Mason C, Porter SR, Madland G, Parry J. Early management of dental pain in children and adolescents. *J Dent*. 1997;25:31–34.
32. Lewis CW, Grossman DC, Domoto PK, Deyo RA. The role of the pediatrician in the oral health of children: a national survey. *Pediatrics*. 2000;106:E84.
33. Meskin L. Look who's practicing dentistry. *J Am Dent Assoc*. 2001;132:1352, 1354, 1356, 1358.
34. Anderson R, Richmond S, Thomas DW. Patient presentation at medical practices with dental problems: an analysis of the 1996 General Practice Morbidity Database for Wales. *Br Dent J*. 1999;186:297–300.
35. Thomas DW, Satterthwaite J, Absi EG, Lewis MAO, Shepherd JP. Antibiotic prescription in acute dental conditions in the primary care setting. *Br Dent J*. 1996;181:401–404.
36. *International Classification of Diseases, Ninth Revision, Clinical Modification*. Hyattsville, Md: National Center for Health Statistics; 1980. DHHS publication PHS 80-1260.
37. Schappert SM. Ambulatory care visits to physician offices, hospital outpatient departments, and emergency departments: United States, 1995. *Vital Health Stat 13*. 1997;No. 129.
38. Tapper-Jones L. A comparison of general medical and dental practitioners' attitudes to diagnosis and management of common oral and medical problems. *Postgrad Education Gen Pract*. 1993;4:192–197.
39. British Medical Association (General Medical Services Committee). *Patients Presenting With Dental Problems*. London, England: British Medical Association; 1994.



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