

**A Retrospective Analysis of Dental Prescribing Trends at a Federally
Qualified Health Center**

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ABSTRACT

Specific Aims: Describe dental prophylactic antibiotic prescribing practices at a federally qualified health center (FQHC) and to determine whether antibiotics are being prescribed according to American Dental Association (ADA) recommendations.

Methods: A retrospective chart review for patients from January 2018-2019, who were 18+ and had been prescribed a medication for a dental procedure. Exclusion from the provided data included a non-antibiotic prescribed.

Results: 178/10,082 de-identified patients were prescribed an antibiotic by a dental provider for prophylaxis. 176/178 (98.9%) of prophylactic antibiotics were prescribed within ADA guidelines. The number of antimicrobial agents used prophylactically were 3 [amoxicillin (n=136, 76.4%), clindamycin (n=38, 21.3%), and penicillin (n=2, 1.1%)]. However, penicillin is not recommended in the ADA guidelines.

Conclusion: Most dental providers at El Rio prescribe antibiotics for dental prophylaxis in accordance with the ADA guidelines. This study shows that El Rio dentists are prescribing appropriately for prophylaxis and are helping to reduce antibiotic resistance in the dental field.

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INTRODUCTION

Antibiotics have changed the face of medicine by making once deadly infections curable. Prompt initiation of antibiotics to treat infections has been proven to reduce mortality. However, antibiotics are being inappropriately prescribed. This is true of all fields of medicine, however, dental prescribers account for approximately half of antibiotics prescribed in the United States.¹ Dental providers primarily prescribe about a dozen different antibiotics and approximately half of the prescriptions are amoxicillin.² The important factors in determining proper prescribing according to guidelines involve the appropriate medication, dose, frequency, and duration.³ The purpose of this study is to evaluate the prevalence of antibiotic prescribing aligned with American Dental Association (ADA) guidelines among dental providers at a Federally Qualified Health Center.

METHODS

Design This study used a retrospective chart review of patients who were prescribed an antibiotic for dental prophylaxis.

Subjects Patients who were at least 18 y.o. and seen by a dental provider within the timeframe of 1/01/18–12/31/18. The study was approved by the University of Arizona's human subjects committee.

Measures: Approx. 10,000 medical charts were reviewed. Demographic data collected including patient's age, race, ethnicity, height, weight, allergies to medications, comorbidity status, prescribed antibiotic and indication, strength, quantity were collected. Only patients using El Rio's pharmacies to fill the dental medication(s) were included in the analysis.

Data collection Data collection was performed by El Rio's Program Analyst of Operations via their electronic health record, Nextgen.

Data analysis Data was used to evaluate the patient population based on whether the medication, dose, and frequency align with ADA guidelines.

RESULTS

1.7% of the patients reviewed for the study were prescribed an antibiotic for dental prophylaxis by an El Rio dental provider. Most patients (98.9%) receiving dental prophylaxis were prescribed antibiotics in compliance with the ADA guidelines. The majority of patients prescribed an antibiotic were new patients (n = 23, 12.9%) and had an unreported appointment event (n=58, 32.6%). The total number of antibiotic types was 3: amoxicillin (n=136, 76.4%) and penicillin (n=2, 1.1%), and clindamycin (n=38, 21.3%).

DISCUSSION

The primary finding of this study is that the prescribing practices at the El Rio Health Center are consistent with the ADA guidelines for dental prophylaxis in terms of agent used, dose, and duration, which is necessary to help reduce antibiotic resistance in the dental field. The findings have several implications in that it shows that dental providers are judiciously prescribing antibiotics, according to ADA guidelines, and are not aggravating the antibiotic resistance epidemic with regards to dental prophylactic treatment. Limitations regarding this project are that a chart review, being descriptive in nature, will not be able to make any rigorous causal inferences. In addition, this study will only be done at a single institution, and, therefore, it will not be valid to assume it is a good description of antibiotic prescribing any other site. The limitations of this study include the percent of unreported appointment types (32.6%) and the

lack of an encounter diagnosis (32.6%) which severely limit what other hypotheses may be investigated. The demographics of patients with endocarditis was also undetermined. The future direction of this study is to consistently report the appointment type and the encounter diagnosis.

CONCLUSIONS

This study shows that El Rio providers are using appropriate dental prophylaxis prescribing practices in terms of agent used, dose, and duration; however, improvements in the way the dental field documents cases of antibiotic prophylaxis are needed to fully assess appropriateness in such, that appointment events and encounter diagnosis should be documented.

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Table 1: Patient Encounter and Treatment Data

Variable	Frequency (n)	%
Appointment Event		
New patient exam	23	12.9
Toothache	20	11.2
Dental walk-in	19	10.7
Dental extraction	11	6.2
Dental exam/eval	9	5.1
Dental recall	9	5.1
Dental restoration	9	5.1
Periodontal scaling/maintenance	8	4.5
Crown prep/delivery	6	3.4
Other	6	3.4
Unreported	58	32.6
Encounter Diagnosis		
Dental caries extending into dentin	13	7.3
Dental caries extending into pulp	13	7.3
Exam/cleaning w/abnormal findings	11	6.2
Chronic periodontitis	5	2.8
Periodontal disease, unspecified	4	2.3
Dental root caries	3	1.7
High risk of dental caries	3	1.7
Cracked tooth	3	1.7
Deposits	2	1.1
Acute apical periodontitis	1	0.6
Chronic gingivitis	1	0.6
Embedded teeth	1	0.6
Horizontal alveolar bone loss	1	0.6
Other specified dental disorder	20	11.2
Other dental procedure status	38	21.4
Unreported	58	32.6
Prescribed Antibiotic		
Amoxicillin	136	76.4
Clindamycin	38	21.3
Penicillin	2	1.1

Table 2: Demographics of Study Sample

Variable	Frequency (n)	%
Patient Age (average =61 y.o.)		
Race		
White	129	72.5
Black/African American	9	5.1
Asian	2	1.1
American Indian /Alaska Native	2	1.1
Unreported	36	20.2
Ethnicity		
Hispanic or Latino	68	38.2
Not Hispanic or Latino	65	36.5
Unreported	45	25.3
Comorbidities		
Hypertension	49	27.5
Dyslipidemia	49	27.5
Diabetes	22	12.4
Asthma	7	3.9
HIV	5	2.4
Antibiotic Allergies		
Penicillin	15	8.4
Sulfas	10	5.6
Tetracycline	2	1.1
Quinolones	2	1.1
Macrolide	1	0.6

Table 3: Appropriateness of the Antibiotic

Variable	n (%)
Received pre-procedure antibiotic prophylaxis	178/10,082 (1.7)
Antibiotic agent selection consistent w/ ADA guidelines	176/178 (98.9)
Prescribed dose and duration consistent w/ ADA guidelines	176/178 (98.9)