Presentation Type:
Poster Presentation - Oral Presentation
Subject Category: Antibiotic Stewardship
Private practice dentists improve antibiotic use after dental antibiotic stewardship from infectious diseases experts
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Background: Dentists prescribe ~25.7 million antibiotic prescriptions annually. Private practice dentists (PPDs) represent 80% of US dentists who need to implement dental antimicrobial stewardship. We conducted a prospective cohort study of PPDs comparing appropriateness of antibiotic use before and after dental AS education. **Methods:** PPDs were invited to participate in this study. In phase 1 (pre-education), we collected 3 months (June–August 2019) of retrospective antibiotic use data (indication, dose, duration, penicillin allergy history) and number of dental procedures. We also conducted a preliminary survey to assess baseline antimicrobial stewardship knowledge. In phase 2 (education), PPDs attended 4 televideo education sessions (March–May 2021) taught by an infectious disease– antimicrobial stewardship (ID-AS) pharmacist and physician. In phase 3 (posteducation), we prospectively collected 3 months (June–August 2021) of antibiotic use data (as in phase 1), using an online database with ongoing feedback. In phase 4, we conducted antibiotic use audit and feedback to PPDs after the survey, and we solicited recommendations to reach more PPDs. The Student *t* test was used for statistical analyses. **Results:** Study participants comprised 15 PPDs: 2 oral maxillofacial surgeons, 6 periodontists, 4 endodontists, and 3 general dentists. Among them, 10 had been in practice >20 years. The presurvey revealed that 14 were unfamiliar with dental antimicrobial stewardship. All prescribed clindamycin (25% for nonpenicillin allergy), and standard antibiotic duration ranged from 5 to 14 days based on dental school training. In phase 3, despite more procedures, overall antibiotic use and duration decreased, and the use of clindamycin, quinolones, and prophylaxis for joint implant patients, also decreased. Appropriate use improved from 22% to 95%. Postsurvey responses on perceived value of antimicrobial stewardship education were 100% positive, with recommendations to make antimicrobial stewardship a required annual continuing education, similar to opioid continuing education. Study participants invited the ID-AS experts to teach an additional 150 PPDs to date via established PPD study clubs to expand dental antimicrobial stewardship across the United States. **Conclusions:** After learning dental antimicrobial stewardship guidance from ID-AS experts, PPDs rapidly optimized antibiotic prescribing behavior. PPDs identified their established study clubs as a forum to quickly expand dental antimicrobial stewardship training by ID-AS experts throughout the United States.
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Table 1.

Outcomes	Pre	Post	P value
Dental procedures (#)	8,526	9,063	
Antibiotic prescriptions (#)	2,124	1,903	<0.0001
Appropriate use (%)	22%	95%	<0.0001
Prophylaxis for infective endocarditis (#)	28	32	0.079
Prophylaxis for Joint implant (#)	163	72	<0.0001
Duration (therapeutic only) Mean days	7.7	5.1	<0.0001
Antibiotic prescriptions (#)			
Clindamycin	183	18	<0.0001
Quinolones	26	5	<0.0001
Amoxicillin	1320	1286	0.02
Azithromycin	86	234	<0.0001
Doxycycline	67	62	0.48

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Metrics in outpatient stewardship: Is more always better?
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Background: Emerging evidence supports the use of billing data to identify stewardship targets in primary care. Standardizing an approach to antibiotic prescribing rate (APR) calculations could facilitate external benchmarking. **Methods:** Using methodology and an ICD-10 dictionary validated in urgent care clinics,[1] we created an expanded ICD-10 dictionary to incorporate additional ICD-10 codes from primary care associated with antibiotic prescriptions (Fig. 1). We then compared antibiotic prescribing rates using the urgent care and expanded dictionaries. We included all primary care visits from 2019 to 2020 and extracted ICD-10 codes and antibiotic order data. Using the urgent care and expanded ICD-10 dictionary, we classified each encounter by prescribing tier based on whether antibiotics are almost always (tier 1), sometimes (tier 2), or almost never (tier 3) indicated. For encounters with ICD-10s in multiple tiers, we chose the lowest tier. For multiple ICD-10 codes within the same tier, we chose the first extracted ICD-10 code. We calculated antibiotic prescribing rates as the proportion of encounters associated with ≥ 1 antibacterial prescription. This quality improvement project was deemed non–human subjects research by the Stanford Panel on Human Subjects in Medical Research. **Results:** The urgent care dictionary has 1,400 ICD-10 codes. We added 1,439 ICD-10 codes derived from primary care encounters to create the expanded ICD-10 dictionary (8.5% tier 1, 9.1% tier 2, and 82.4% tier 3) (Fig. 1). We identified 177,531 encounters; 74% had ≥ 2 associated ICD-10 codes (Fig. 2). In total, 147,085 encounters (82.9%) were classified into a tier using the urgent care dictionary. An additional 22,039 encounters were classified with the expanded dictionary (Table 1). Most added encounters were tier 3 with low 0.7% APR (Tables 1 and 3). In total, 41,473 (28.2%) encounters were classified differently depending on the ICD-10 dictionary used, most commonly changing from tier 3 to tier 2 without an increase in overall tier 2 antibiotic prescribing rate (Tables 2 and 3). Overall antibiotic prescribing rates were similar when using either the urgent care or expanded ICD-10 dictionary (Table 2). **Conclusions:** The expanded ICD-10 dictionary allowed for classification of more encounters in primary care; however, it did not meaningfully change antibiotic prescribing rates. Antibiotic prescribing rates were likely diluted by classifying more encounters without identifying an associated increase in

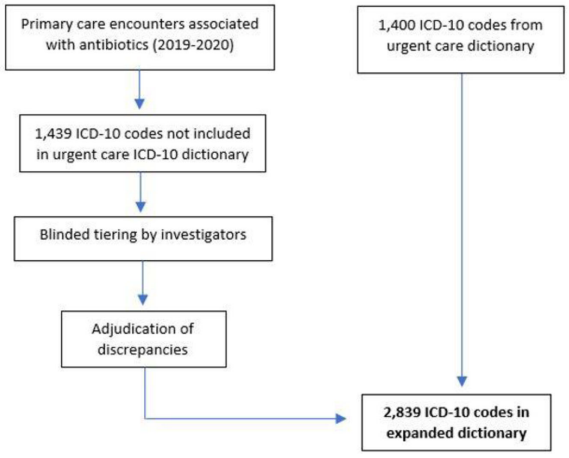

Figure 1: Methodology for Creating the Expanded ICD-10 Dictionary