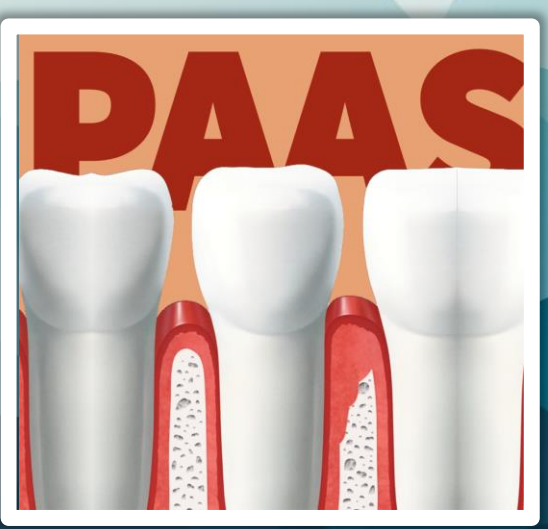
PERIODONTAL ADJUNCTIVE ANTIBIOTICS

The National Dental Practice-Based Research Network

The nation's network



WHY WE NEED TO TEST ANTIBIOTICS AS ADJUNCTIVES IN PERIO?

Antibiotic stewardship

- optimize antibiotic prescribing to effectively treat infections
- reduce antibiotic misuse
- prevent the development of antibiotic-resistant microbial strains

ANTIBIOTIC PRESCRIPTION PATTERNS AMONG U.S. GENERAL DENTISTS AND PERIODONTISTS

Table2. Antibiotic prescription practices during SRP,* stratified by organization.

ANTIBIOTIC PRESCRIPTION PRACTICE VARIABLES	AMERICAN ACADEMY OF PERIODONTOLOGY		AMERICAN DENTAL ASSOCIATION		OVERALL			*P* VALUE
	n/N	%	n/N	%	n	N	%	
Treating Patient With SRP? (Yes)	250/266	94.0	256/299	85.6	506	565	89.6	.53
Prescribing Antibiotics With SRP? (Yes)	116/250	46.4	48/256	18.8	164	506	32.4	.0001

Ioannidou E, Geurs N, Lipman R, Araujo MWB, Elkareh J, Engebretson S, Eber R, Oates T, Diaz P, Spino C. J Am Dent Assoc. 2022 Oct;153(10):979-988

WHY WE NEED TO TEST ANTIBIOTICS AS ADJUNCTIVES IN PERIO?

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Only small-scale clinical trials[1] are available to support recommending antibiotics to severe or aggressive periodontitis cases.

1. Smiley CJ *et al. (2015)* JADA . doi: 10.1016/j.adaj.2015.01.028

SYSTEMATIC REVIEW
NONSURGICAL TREATMENT OF CHRONIC PERIODONTITIS BY SCALING AND ROOT PLANING (SRP)

ADA. Center for Evidence-Based Dentistry™

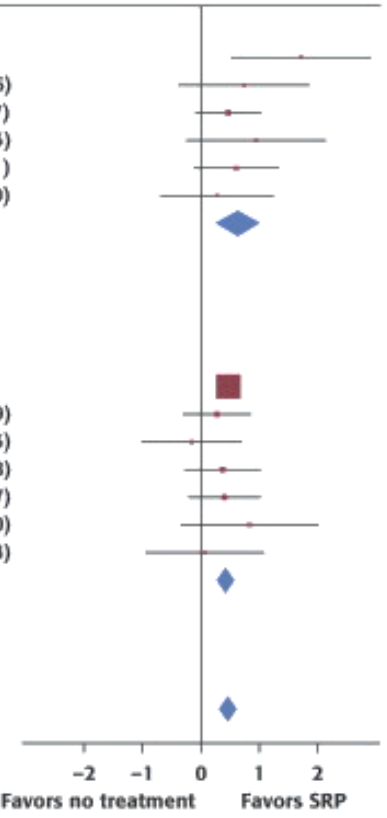
Systematic Review and Meta-Analysis on the Nonsurgical Treatment of Chronic Periodontitis by Scaling and Root Planing with or without Adjuncts

ABSTRACT

Background

A panel of experts convened by the American Dental Association (ADA) Council on Scientific Affairs (CSA) presents a systematic review and meta-analysis on nonsurgical treatment of patients with chronic periodontitis by scaling and root planing (SRP) with or without adjuncts.

Study or Subgroup	Mean Difference	SE	SRP Total	No Treatment Total	Weight	Mean Difference IV, Random, 95% CI
1.1.1 Split mouth						
Lindhe and Colleagues,[20] 1983	1.8	0.63	7	7	1.1%	1.80 (0.57-3.03)
Neill and Mellonig,[21] 1997	0.8	0.59	10	10	1.3%	0.80 (−0.36 to 1.96)
Ng and Bissada,[22] 1998	0.5	0.29	8	8	5.2%	0.50 (−0.07 to 1.07)
Berglundh and Colleagues,[18] 1998	1	0.63	8	8	1.1%	1.00 (−0.23 to 2.23)
Kahl and Colleagues,[19] 2007	0.65	0.39	20	20	2.9%	0.65 (−0.11 to 1.41)
Rotundo and Colleagues,[23] 2010	0.3	0.51	26	26	1.7%	0.30 (−0.70 to 1.30)
Subtotal (95% CI)			**79**	**79**	**13.3%**	**0.69 (0.33-1.04)**
Heterogeneity: $\tau^2 = 0.00$; $\chi^2 = 4.41$, $df = 5$, $P = .49$; $I^2 = 0\%$						
Test for overall effect: $z = 3.77$ ($P = .0002$)						
1.1.2 Parallel group						
Jones and Colleagues,[25] 1994	0.5	0.08	6	10	68.8%	0.50 (0.34-0.66)
Van Dyke and Colleagues,[27] 2002	0.3	0.3	12	13	4.9%	0.30 (−0.29 to 0.89)
Ribeiro and Colleagues,[26] 2008	−0.15	0.45	13	12	2.2%	−0.15 (−1.03 to 0.73)
Chen and Colleagues,[24] 2012 (versus debridement)	0.41	0.34	42	20	3.8%	0.41 (−0.26 to 1.08)
Chen and Colleagues,[24] 2012 (versus polish)	0.44	0.32	43	21	4.3%	0.44 (−0.19 to 1.07)
Zhou and Colleagues,[28] 2014 (versus no treatment)	0.88	0.62	10	20	1.1%	0.88 (−0.34 to 2.10)
Zhou and Colleagues,[28] 2014 (versus scale)	0.08	0.54	10	20	1.5%	0.08 (−0.98 to 1.14)
Subtotal (95% CI)			**136**	**116**	**86.7%**	**0.46 (0.32-0.60)**
Heterogeneity: $\tau^2 = 0.00$; $\chi^2 = 3.35$, $df = 6$, $P = .76$; $I^2 = 0\%$						
Test for overall effect: $z = 6.50$ ($P < .00001$)						
Total (95% CI)			**215**	**195**	**100%**	**0.49 (0.36-0.62)**
Heterogeneity: $\tau^2 = 0.00$; $\chi^2 = 9.05$, $df = 12$, $P = .70$; $I^2 = 0\%$						
Test for overall effect: $z = 7.42$ ($P < .00001$)						
Test for subgroup differences: $\chi^2 = 1.30$, $df = 1$, $P = .25$; $I^2 = 23.0\%$						



Smiley et al. The Journal of the American Dental Association. Volume 146, Issue 7, Pages 508-524.e5 (July 2015) DOI: 10.1016/j.adaj.2015.01.028

5, $P = .49$; $I^2 = 0\%$
2)

	0.5	0.08	6	10	68.8%	0.50 (0.34-0.66)
	0.3	0.3	12	13	4.9%	0.30 (−0.29 to 0.89)
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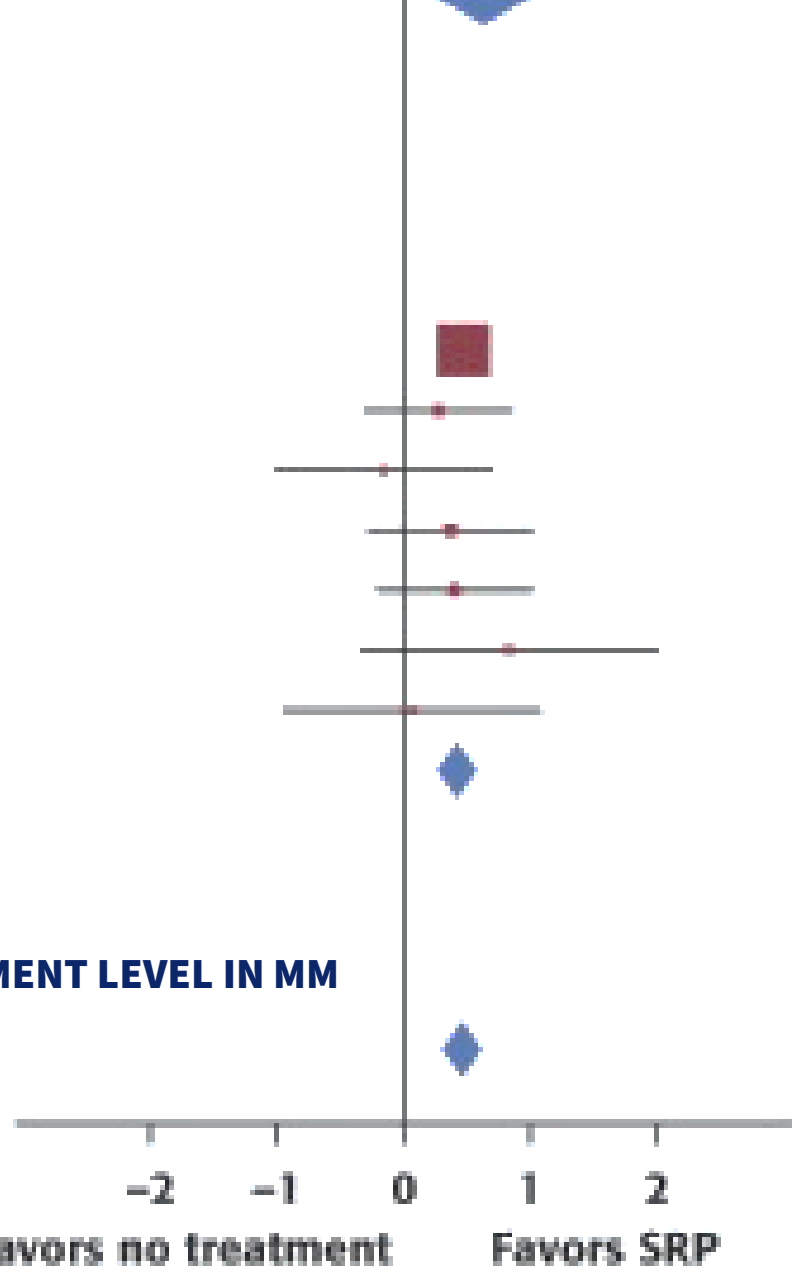
			136	116	86.7%	0.46 (0.32-0.60)

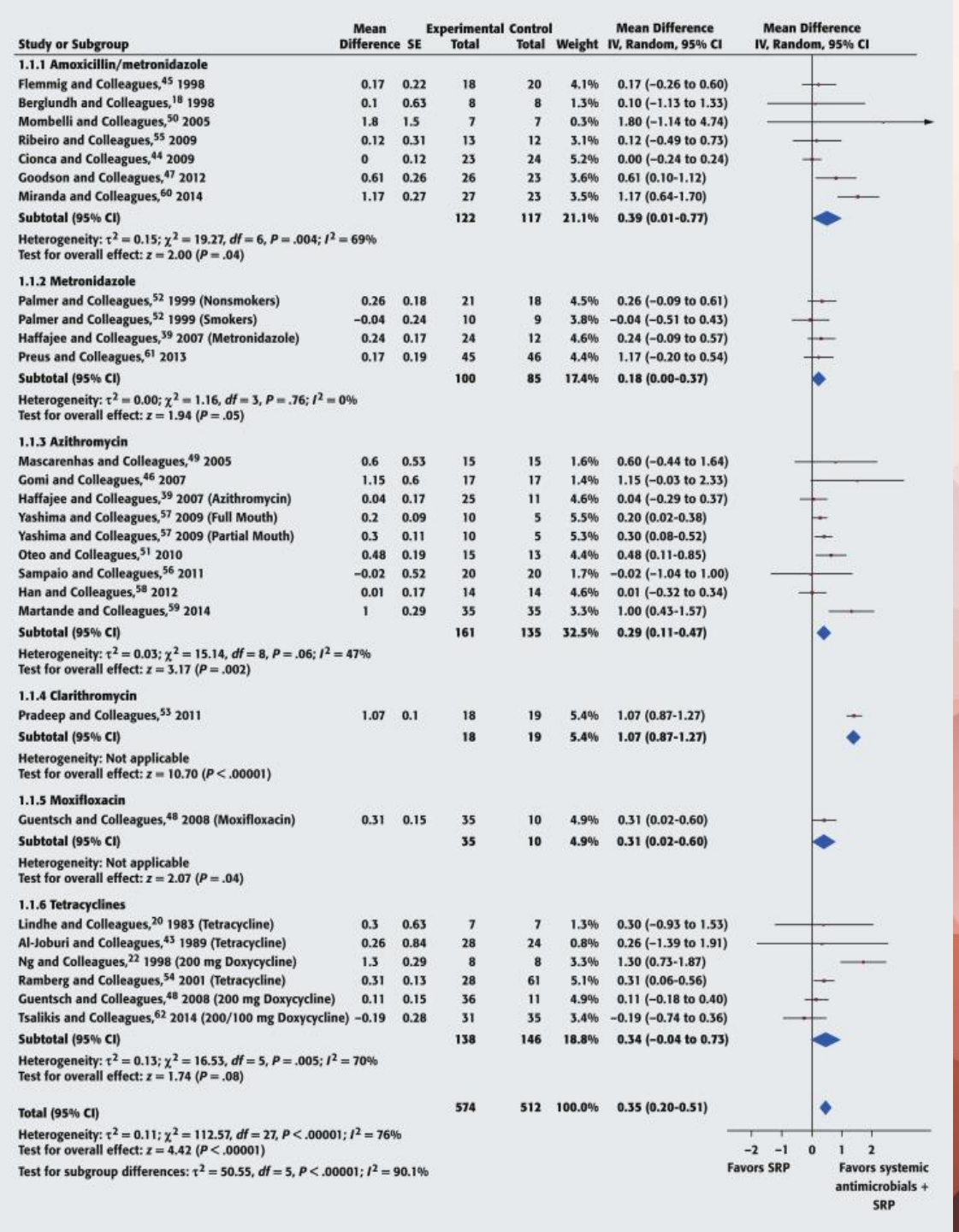
6, $P = .76$; $I^2 = 0\%$
01)

MEAN DIFFERENCE IN CLINICAL ATTACHMENT LEVEL IN MM

			215	195	100%	0.49 (0.36-0.62)

12, $P = .70$; $I^2 = 0\%$
01)
$df = 1$, $P = .25$; $I^2 = 23.0\%$





SYSTEMATIC REVIEW SRP + SYSTEMIC ANTIMICROBIALS VERSUS SRP ALONE

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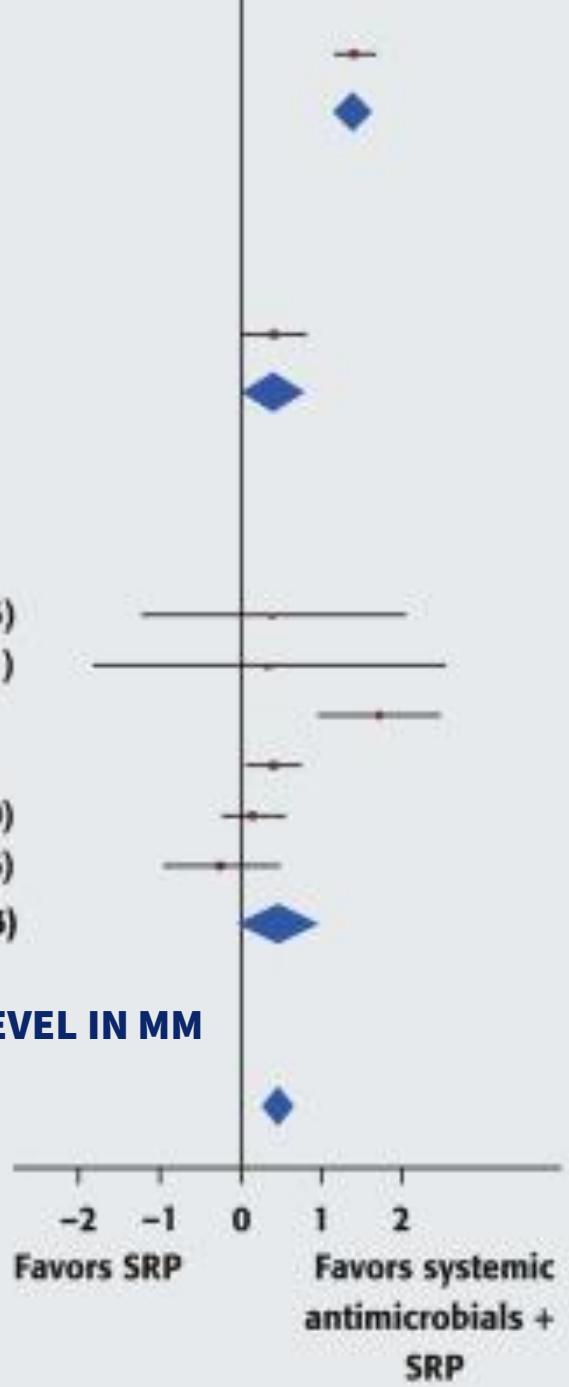
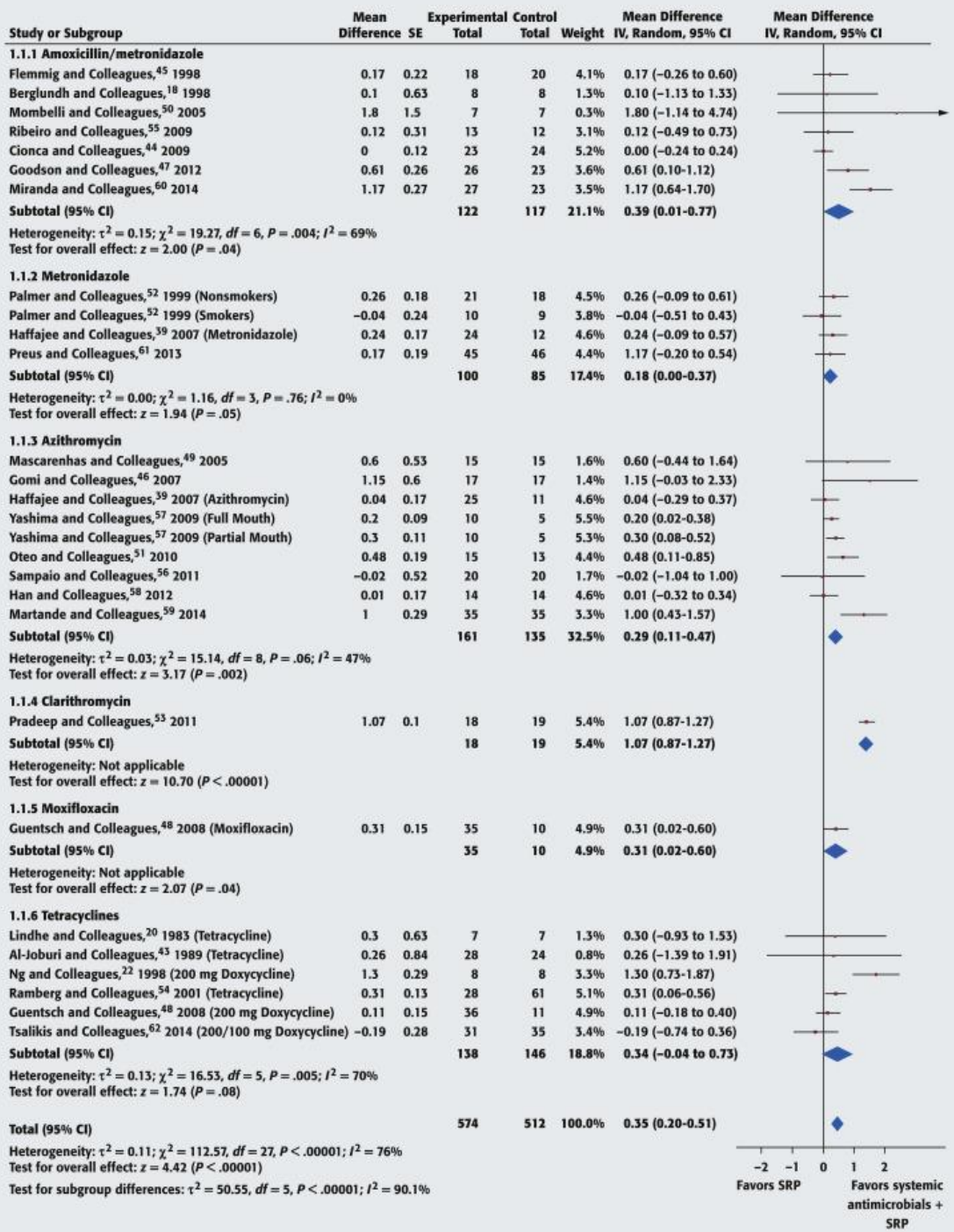
1.1.4 Clarithromycin						
Pradeep and Colleagues,[53] 2011	1.07	0.1	18	19	5.4%	1.07 (0.87-1.27)
Subtotal (95% CI)			**18**	**19**	**5.4%**	**1.07 (0.87-1.27)**
Heterogeneity: Not applicable						
Test for overall effect: $z = 10.70$ ($P < .00001$)						
1.1.5 Moxifloxacin						
Guentsch and Colleagues,[48] 2008 (Moxifloxacin)	0.31	0.15	35	10	4.9%	0.31 (0.02-0.60)
Subtotal (95% CI)			**35**	**10**	**4.9%**	**0.31 (0.02-0.60)**
Heterogeneity: Not applicable						
Test for overall effect: $z = 2.07$ ($P = .04$)						
1.1.6 Tetracyclines						
Lindhe and Colleagues,[20] 1983 (Tetracycline)	0.3	0.63	7	7	1.3%	0.30 (−0.93 to 1.53)
Al-Joburi and Colleagues,[43] 1989 (Tetracycline)	0.26	0.84	28	24	0.8%	0.26 (−1.39 to 1.91)
Ng and Colleagues,[22] 1998 (200 mg Doxycycline)	1.3	0.29	8	8	3.3%	1.30 (0.73-1.87)
Ramberg and Colleagues,[54] 2001 (Tetracycline)	0.31	0.13	28	61	5.1%	0.31 (0.06-0.56)
Guentsch and Colleagues,[48] 2008 (200 mg Doxycycline)	0.11	0.15	36	11	4.9%	0.11 (−0.18 to 0.40)
Tsalikis and Colleagues,[62] 2014 (200/100 mg Doxycycline)	−0.19	0.28	31	35	3.4%	−0.19 (−0.74 to 0.36)
Subtotal (95% CI)			**138**	**146**	**18.8%**	**0.34 (−0.04 to 0.73)**
Heterogeneity: $\tau^2 = 0.13$; $\chi^2 = 16.53$, $df = 5$, $P = .005$; $I^2 = 70\%$						
Test for overall effect: $z = 1.74$ ($P = .08$)						
Total (95% CI)			**574**	**512**	**100.0%**	**0.35 (0.20-0.51)**
Heterogeneity: $\tau^2 = 0.11$; $\chi^2 = 112.57$, $df = 27$, $P < .00001$; $I^2 = 76\%$						
Test for overall effect: $z = 4.42$ ($P < .00001$)						
Test for subgroup differences: $\tau^2 = 50.55$, $df = 5$, $P < .00001$; $I^2 = 90.1\%$						





SYSTEMATIC REVIEW
SRP + SYSTEMIC ANTIMICROBIALS VERSUS SRP ALONE

Systemic antimicrobials* clinical recommendation summary.

Level of certainty: Moderate, 24 randomized controlled trials with 1,086 participants, substantial inconsistency between individual trial results, but no serious imprecision

Benefit: Small, overall net gain in clinical attachment (mean difference, 0.35 millimeter; 95% confidence interval, 0.20-0.51; improvement)

Adverse effects: Most commonly gastrointestinal, although some serious allergic reactions are possible, as well as the risk of antimicrobial-resistant bacteria development

Net benefit rating: Balance between small benefit and potential for adverse effects

Strength of clinical recommendation: Weak

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WHY IS THIS STUDY BEING DONE?

Antibiotic stewardship

- optimize antibiotic prescribing to effectively treat infections
- reduce antibiotic misuse
- prevent the development of antibiotic-resistant microbial strains

Only small-scale clinical trials[1] are available to support recommending antibiotics to severe or aggressive periodontitis cases.

The ADA expert panel[2] suggested that larger pragmatic clinical trials would benefit dental professionals in their clinical decision making.

1. Smiley CJ *et al. (2015)* JADA . doi: 10.1016/j.adaj.2015.01.028
2. Smiley CJ *et al*. (2015) JADA. doi: 10.1016/j.adaj.2015.01.026

PAAS Study:

A randomized controlled trial

STUDY AIMS

To evaluate the effectiveness of adjunctive antibiotics in the treatment of periodontitis

STUDY DESIGN

Participants

Patients with periodontitis from 36 practitioners from the South Central, Southwest, and Western nodes of the Network (16-22 patients per practitioner)

Intervention

Antibiotic (Amoxicillin + Metronidazole) + SRP

Sample size

276 per arm

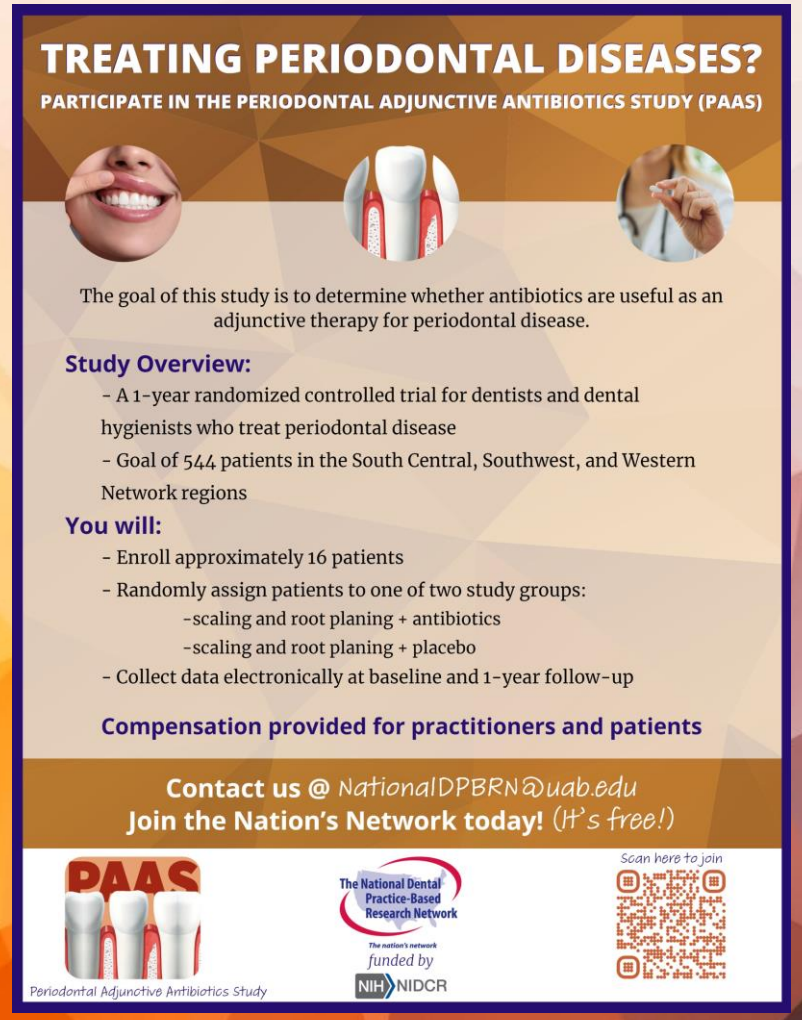
Comparison

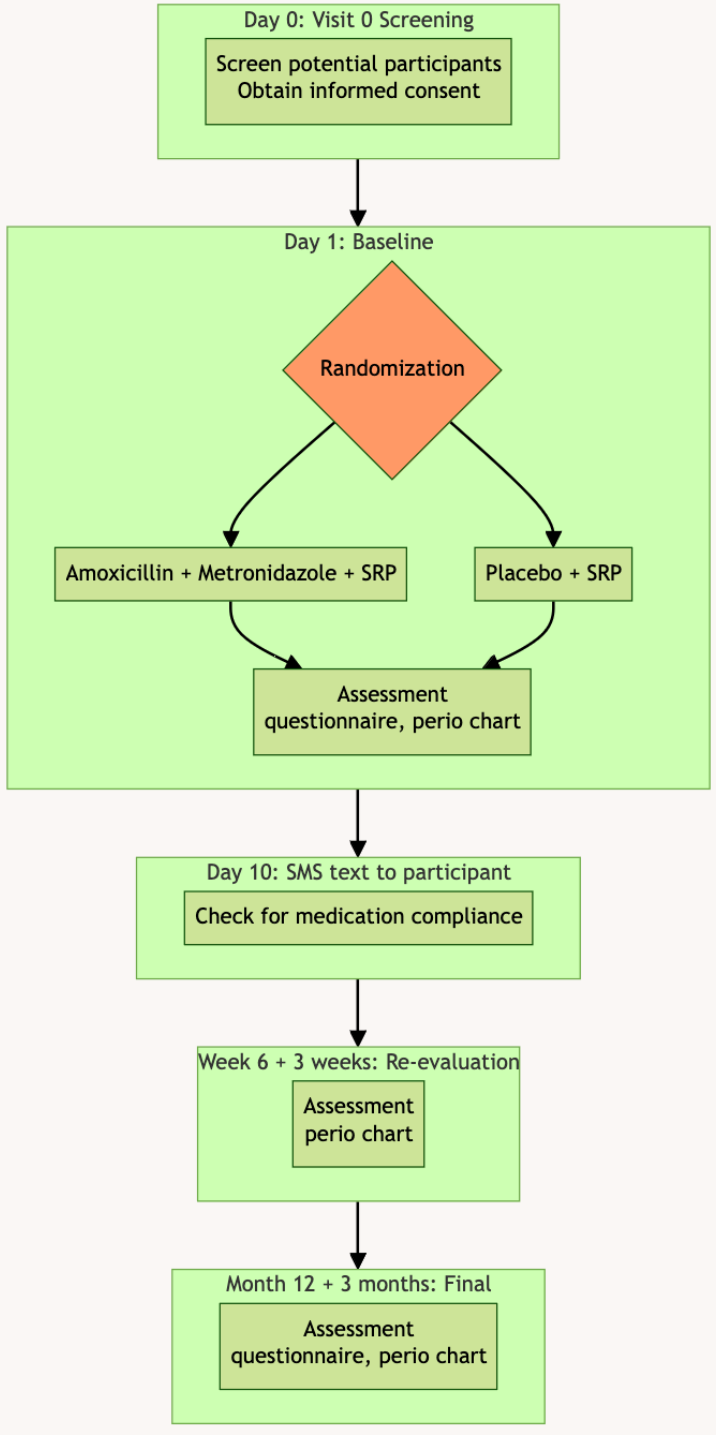
Placebo + SRP

Sample size

276 per arm

WHAT IS EXPECTED OF PRACTITIONERS?





Patient Eligibility Criteria

- ✓ 40 years old or older
- ✓ ≥ 20 permanent teeth excluding 3rd molars
- ✓ Planned to receive periodontal care for Generalized Stage II-III periodontitis
- ✓ Planned for a minimum of two quadrants of SRP (CDT code D 4341)

- ✗ No history of periodontal therapy (including SRP D4341, D4342) within the last 6 months
- ✗ No use of systemic antibiotics within previous 3 months
- ✗ No known allergy to antibiotics or anesthetics
- ✗ No medical condition(s) that requires antibiotic prophylaxis prior to dental treatments
- ✗ No current use of medications that, in the opinion of the practitioner, may cause adverse effects with AMXM (such as disulfiram, warfarin, and oral contraceptives)
- ✗ Not currently pregnant or lactating (per patient participant self-report)

QUESTIONS FOR BREAKOUT SESSION

1. In your experience, what **challenges do you face** in making informed decisions about prescribing antibiotics for periodontal treatment?
2. Do the **current guidelines** regarding adjunctive antibiotics feel vague or lacking in supporting evidence? If so, how does this impact your approach to treatment?
3. In your opinion, what factors currently make **predicting individual patient response** to adjunctive antibiotics in periodontics difficult?
4. What specific insights from the PAAS trial do you anticipate will be most valuable for shaping **future clinical guidelines** and best practices for antibiotic use in periodontics?
5. Beyond influencing antibiotic guidelines, how do you envision the findings of PAAS shaping **the future of periodontal therapy** overall?