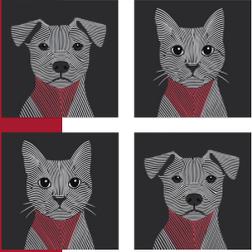


**Antimicrobial Use  
in Orofacial  
Medicine And Surgery**

Alexander Geddes, BVetMed, PGDip VCP, DAVDC, MRCVS  
Board Certified Veterinary Dentist\*  
Fellow Candidate, Veterinary OMFS




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**ANTIMICROBIAL STEWARDSHIP**  
*Right Bug,  
Right Drug*



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**AVDC**  
AMERICAN VETERINARY DENTAL COLLEGE

Pending Consensus Statement



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**Veterinary Dentistry Literature?**

> J Am Vet Med Assoc. 2023 Nov 15;245(11):1665-1671. doi: 10.2460/javma.23.08.0304. Print 2023 Dec 1.

**Variation in knowledge, attitude, and practices toward antibiotic use among diplomates of the American Veterinary Dental College: a survey-based study**

Jennifer A Montebello <sup>1</sup>, Jennifer L Grassie <sup>2</sup>, Emma R Bilgic <sup>3</sup>, Stephanie L Goldschmidt <sup>4</sup>  
Affiliations + expand  
PMID: 37695101 DOI: 10.2460/javma.23.08.0304

> PLoS One. 2023 Dec 8;18(12):e0295070. doi: 10.1371/journal.pone.0295070. eCollection 2023.

**Antimicrobial use practices in canine and feline dental procedures performed in primary care veterinary practices in the United States**

J Scott Weese <sup>1</sup>, Ian Battersby <sup>2</sup>, Jaden Morrison <sup>3</sup>, Nathaniel Spofford <sup>4</sup>, Maria Sobrero-Rivers <sup>4</sup>  
Affiliations + expand  
PMID: 38054436 PMCID: PMC10707803 DOI: 10.1371/journal.pone.0295070

> J Am Vet Med Assoc. 2024 Nov 22;245(11):1665-1671. doi: 10.2460/javma.24.08.0524. Print 2025 Apr 1.

**Prophylactic antibiotic use is common in dogs and cats presenting for procedures at veterinary referral dental practices**

Allison C Vuk <sup>1</sup>, Stephanie L Goldschmidt <sup>2</sup>, Emma R Bilgic <sup>3</sup>, Jennifer A Montebello <sup>4</sup>, Jennifer L Grassie <sup>5</sup>  
Affiliations + expand  
PMID: 39579477 DOI: 10.2460/javma.24.08.0524

> PLoS One. 2024 Jul 10;19(7):e0305533. doi: 10.1371/journal.pone.0305533. eCollection 2024.

**Antimicrobial use practices in canine and feline patients with co-morbidities undergoing dental procedures in primary care practices in the US**

Maria Sobrero-Rivers <sup>1</sup>, Ian Battersby <sup>2</sup>, Jaden Morrison <sup>3</sup>, Nathaniel Spofford <sup>4</sup>, J Scott Weese <sup>4</sup>  
Affiliations + expand  
PMID: 38883078 PMCID: PMC11028187 DOI: 10.1371/journal.pone.0305533

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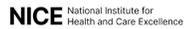
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> J Am Dent Assoc. 2019 Nov;150(11):906-921.e12. doi: 10.1016/j.adaj.2019.08.020.

**Evidence-based clinical practice guideline on antibiotic use for the urgent management of pulpal- and periapical-related dental pain and intraoral swelling: A report from the American Dental Association**

Peter B Lockhart, Malavika P Tampi, Elliot Abt, Anita Aminoshariaf, Michael J Durkin, Ashraf F Fouad, Prema Gopal, Benjamin W Hatten, Erinna Kennedy, Melanie S Lang, Lauren L Patton, Thomas Paumier, Katie J Suda, Lauren Pilcher, Olivia Urrquhart, Kelly K O'Brien, Alonso Carrasco-Labra

PMID: 31668170 PMCID: PMC8270006 DOI: 10.1016/j.adaj.2019.08.020

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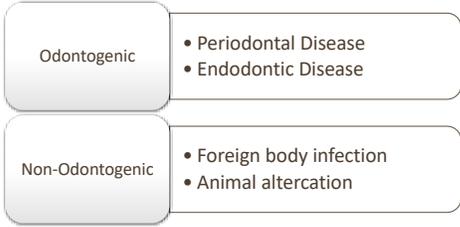
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**Orofacial Disease Associated with Bacteria**



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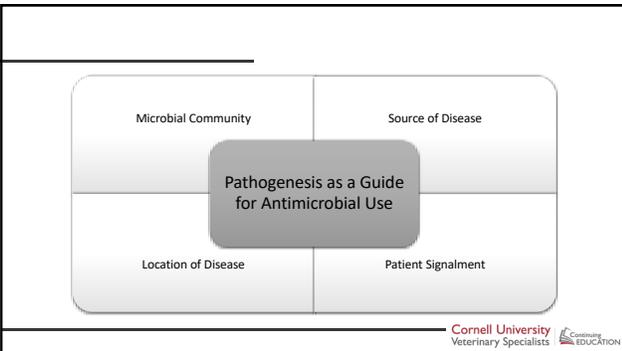
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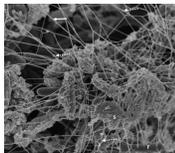
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**Dental Plaque Biofilm**

- Community of co-dependent micro-organisms (bacteria, fungi, protozoa) that adhere to each other and the oral cavity.
- Community resides within a protective extracellular matrix resistant to chemical insult (topical and systemic)



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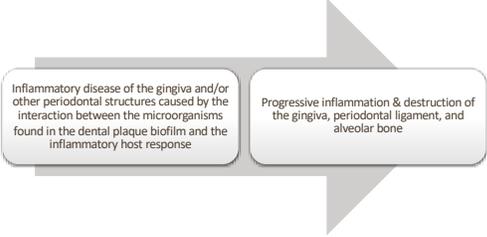
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**What is Periodontal Disease?**



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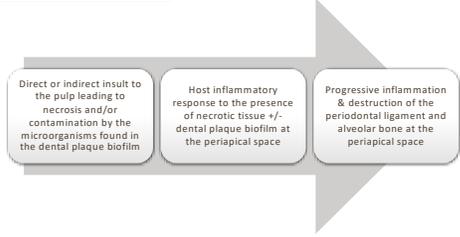
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**What is Endodontic Disease?**



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**Possible Clinical Consequences of Periodontal & Endodontic Disease**

- Tooth Loss
- Oral Draining Tract
- Facial Draining Tract
- Facial Cellulitis
- Facial Abscessation
- Osteomyelitis

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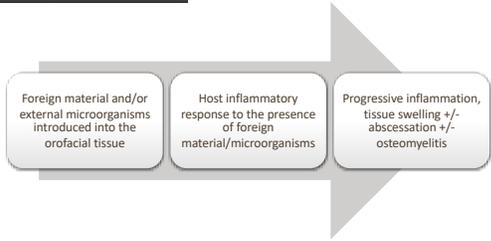
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**Non-Odontogenic Penetrating Injuries**



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**Possible Clinical Consequences of Penetrating Injuries**

- Oral Draining Tract
- Facial Draining Tract
- Facial Cellulitis
- Facial Abscessation
- Bone Fracture
- Osteomyelitis
- Sepsis/SIRS

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**Categories to Evaluate for Antimicrobial Use**

- Periodontal Disease (without swelling)
- Endodontic Disease (without swelling)
- Facial Swelling
- Osteomyelitis
- Facial Trauma

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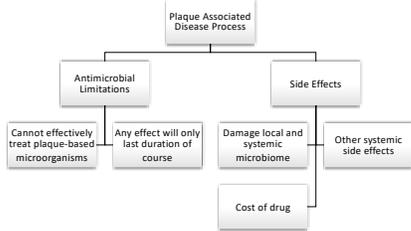
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**Antimicrobial Limitations for Periodontal and Endodontic Disease**



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**Periodontal and Endodontic Targets?**



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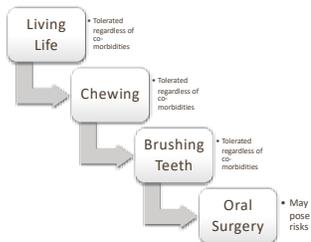
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**Bacteremia as Systemic Concern?**



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**Appropriate use for Periodontal & Endodontic Disease?**

Pre-Operatively	✗
Peri-Operatively	?
Post-Operatively	✗

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**Periodontal and Endodontic Disease Peri-operative**

- Immunosuppressed
  - Chemotherapy
  - Prednisone/Cyclosporine etc.
  - Diabetes Mellitus?
  - Stomatitis?
  - Cushing's?
- Cardiac
  - Exposed or risk of exposure of endothelium
    - Restrictive cardiomyopathies
    - History of endocarditis
    - Implants
- Healing Orthopedic Surgery/Implant

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**Categories to Evaluate for Antimicrobial Use**

- Periodontal Disease (without swelling)
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- Facial Swelling
- Osteomyelitis
- Facial Trauma

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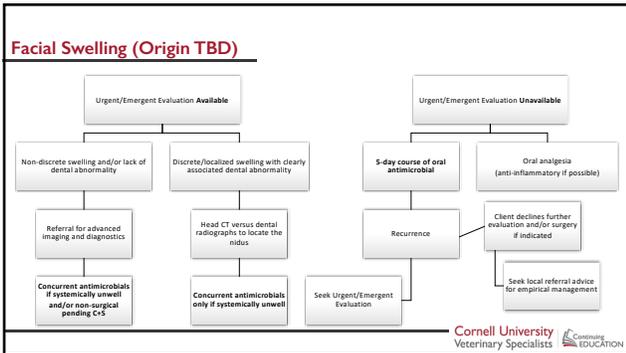
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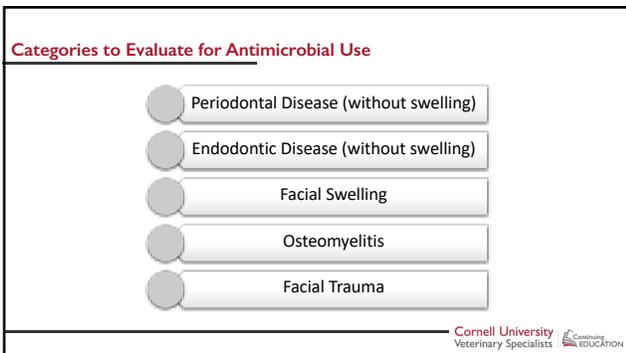
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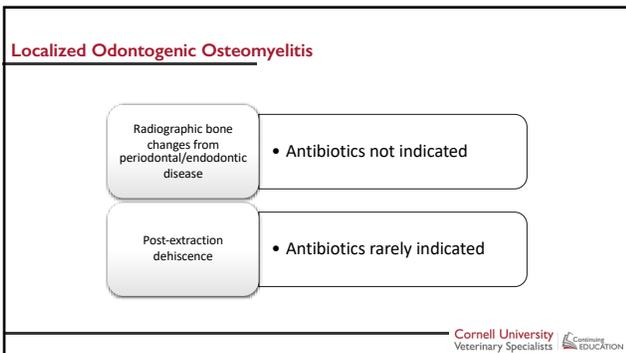
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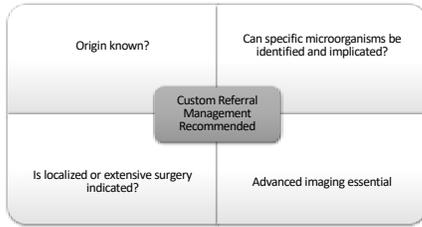
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**Generalized Osteomyelitis**



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**Categories to Evaluate for Antimicrobial Use**

- Periodontal Disease (without swelling)
- Endodontic Disease (without swelling)
- Facial Swelling
- Osteomyelitis
- Facial Trauma

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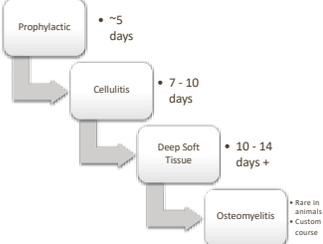
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**Facial Trauma from Animal Altercation**



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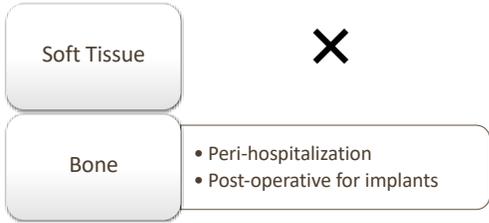
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Facial Trauma from Blunt Force



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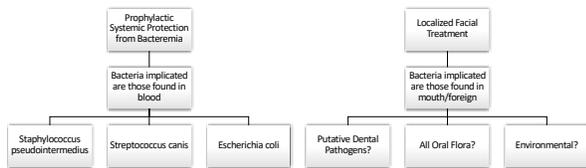
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Which Bugs?



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### Which Empirical Drugs?

Perioperative Prophylaxis				
	Ampicillin	Clindamycin	Cefazolin	Ampicillin-Sulbactam
Staph / Strep	+++	+++	+++	+++
E. Coli	+/-	-	++	++/+++

Local Treatment				
	Amox/Clav	Clindamycin	Enrofloxacin	Amox/Clav + Enro
Putative Dental Pathogens	++	+++	+	+++
All Oral Flora	++	++	++	+++
Environmental Flora	+++	++	+++	+++

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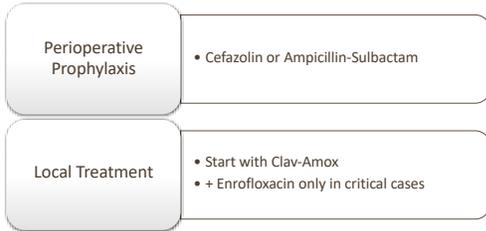
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### Empirical Suggestions



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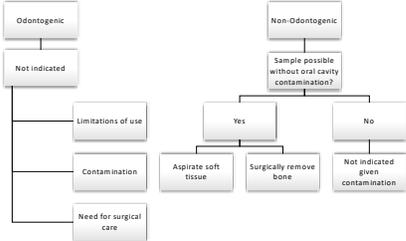
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### Culture + Sensitivity?



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**Conclusions**

- Antimicrobials are uncommonly indicated in dentistry, orofacial medicine and surgery
- Culture and sensitivity have major limitations for orofacial disease, particularly those of odontogenic origin
- Consider both pathogenesis and signalment in targeted prescription when indicated to maximize stewardship
- Ensure clear client education as to the limitations of empirical antimicrobial therapy for both routine and complex orofacial disease

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Thanks for listening!

[ageddes@cuvs.org](mailto:ageddes@cuvs.org)  
[dentistry@cuvs.org](mailto:dentistry@cuvs.org)

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