### 2023 TheSkinVet Recommendations for Appropriate Antimicrobial Use in Canine Dermatology & Otitis Cases

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<tr>
<th>CONDITION(MICROBIAL INFECTION)</th>
<th>EXAMPLES</th>
<th>INVESTIGATION</th>
<th>LIKELY PATHOGEN(S)</th>
<th>EMPIRICAL ANTIMICROBIAL CHOICE</th>
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<tr>
<td><strong>DERMATO-PHYTOSIS (RINGWORM)</strong></td>
<td>Superficial</td>
<td>TG wWL hC</td>
<td>Microsporum Canis Trichophyton mentagrophytes M persicolor</td>
<td>?Clipping → Chlorhexidine ± Azole shampoo + Lime Sulphur or Enilconazole rinse; (Miconazole cream)</td>
<td>Always use systemics too Age (young/old), Breed, Zoonosis, Environment</td>
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<tr>
<td>Pseudo-Mycetoma</td>
<td>tC&amp;S</td>
<td>Microsporum Canis</td>
<td>-</td>
<td>-Azoles (Terbinafine)</td>
<td>Breed Surgical excision</td>
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<td><strong>YEAST OVER-GROWTH</strong></td>
<td>ATS IS (C)</td>
<td>Malassezia Pachydermatis</td>
<td>Chlorhexidine ± Miconazole/Ophytrium shampoo/mousse/wipes</td>
<td>-Azoles (possible long term pulsed)</td>
<td>Breed Secondary esp. hypersensitivity</td>
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<td><strong>OTITIS</strong></td>
<td>IS (rarely sC&amp;S)</td>
<td>Malassezia Pachydermatis</td>
<td>Always Cleanser first: esp. PCMX etc Aural polypharmacy: -Azole or other AFs + Glucocorticoid Lifelong pulsed: Topical Cleanser then HCA</td>
<td>Short term: Glucocorticoids Long term: CyclosporinA Possible long term pulsed: -Azoles</td>
<td>Treatment tuition/Compliance! Treat Primary Cause, Secondary Microbial infection, plus predisposing &amp; perpetuating factors <a href="http://www.theskinvet.net/clients/recipient-ear-infections/">http://www.theskinvet.net/clients/recipient-ear-infections/</a></td>
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<td><strong>SURFACE PYODERMA</strong></td>
<td>Microbial overgrowth Intertrigo (fold 'pyoderma')</td>
<td>IS ATS (sC&amp;S)</td>
<td>Staphylococcus pseudintermedius/schleiferi</td>
<td>Chlorhexidine ± Azole/Ophytrium shampoo/mousse/wipes ± Hypochlorous spray/gel</td>
<td>Treat Primary Cause Secondary esp. hypersensitivity (esp Canine Atopic Dermatitis)</td>
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<tr>
<td>Pyotraumatic Dermatitis ('hotspot', acute moist dermatitis)</td>
<td>IS (sC&amp;S)</td>
<td>Staphylococcus pseudintermedius/schleiferi</td>
<td>Chlorhexidine ± Azole/Ophytrium shampoo/mousse/wipes ± HCA or astringent spray (Isoxazoline)</td>
<td>Short term Glucocorticoids / Oclacitinib</td>
<td>Breed Secondary esp. hypersensitivity / ectoparasitism</td>
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<tr>
<td>SUPERFICIAL PYODERMA</td>
<td>Folliculitis 'Impetigo'</td>
<td>IS (sC&amp;S)</td>
<td><em>Staphylococcus pseudintermedius</em> /schleiferi</td>
<td>Always</td>
<td>Chlorhexidine + Azole/Ophytrium shampoo /mousse/wipes ± Hypochlorous spray/gel ± Fluorescence Biomodulation (Isoxazoline)</td>
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<tr>
<td>DEEP PYODERMA</td>
<td>Cellulitis Furunculosis</td>
<td>FNA tC&amp;S → Biochem/Haem T4:Tsh UCCR-LDDST</td>
<td><em>Staphylococcus pseudintermedius</em> /schleiferi /<em>Pseudomonas aeruginosa</em> etc</td>
<td>Chorhexidine + -Azole/Ophytrium Shampoo ± Hypochlorous spray ± Fluorescence Biomodulation ± Whirlpool baths (Ioxazoline)</td>
<td>Choice based on tC&amp;S (definitely if used empirical antibiotics before) Consider analgesia too</td>
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<td>OTITIS EXTERNA</td>
<td>IS Pre &amp; post treatment (rarely sC&amp;S)</td>
<td><em>Staphylococcus pseudintermedius</em> /<em>Pseudomonas aeruginosa</em> etc</td>
<td>Always Cleaner first: Chlorhexidine/PCMX/EDTA/acid/ Monosaccharides ± AMP ± alternate with TriEDTA/ ± N-acetylcysteine flushes Aural polypharmacy: Glucocorticoid + aminoglycoside/fluoroquinolone</td>
<td>Glucocorticoids No systemic AB unless (proven/ highly suspected) Otitis Media</td>
<td>Treatment tuition/Compliance! Treat Primary Cause (esp Canine Atopic Dermatitis), Secondary Microbial infection, plus predisposing &amp; perpetuating factors Biofilms may physically prevent efficacious topical therapy <a href="http://www.theskinvet.net/clients/recent-ear-infections/">http://www.theskinvet.net/clients/recent-ear-infections/</a></td>
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<tr>
<td>WOUND SC INFECTIONS</td>
<td>Dog Bite</td>
<td>IS (sC&amp;S)</td>
<td>Any</td>
<td>Saline flushing+ TriEDTA flush/Chlorhexidine gel ± Hypochlorous spray/gel</td>
<td>± 1st Amoxycillin-Clavulanate + Analgesia</td>
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**Abbreviations:**
- **ATS Acetate Tape Strip/RapiDiff®/Cytology**
- **sC&S Swab/Culture & Sensitivity Testing**
- **hCA Hydrocortisone aceponate**
- **FNA Fine needle aspiration/RapiDiff®/Cytology**
- **tC&S Tissue sample/Culture & Sensitivity Testing**
- **hC Hair Pluck-Skin Scraping/Culture**
- **IS Impression Smear/RapiDiff®/Cytology**
- **TG Hair Pluck-Skin Scraping/Liquid Paraffin/Trichography**
- **WWL warmed Wood’s Lamp**
Antimicrobial Treatment Examples (alphabetical, topical unless stated otherwise):

- **AB/glucocorticoid gel**: Isaderm Gel®
- **Aminoglycosides**: Easotic®, Otomax®
- **Amoxicillin-Clavulanate (systemic)**: Clavaseptin®, Kesium®, Noroclav®, Synulox® etc.
- **AMP (antimicrobial peptide)**: Shampoo/Topical solution/Aural - Peptivet®
- **-Azoles (aural)**: LimePlus Dip® rinse (lime sulphur - unlicensed), Imaverol® rinse (enilconazole), Daktarin cream® (miconazole - unlicensed)
- **-Azoles (systemic)**: Posatex® (posaconazole), Easotic® (miconazole)
- **AMP (antimicrobial peptide)**: Shampoo/Topical solution/Aural - Peptivet®
- **Cephalosporins**: Sonotix®
- **Cephalixin**: Ceporex®, Cephacare®, Rilexine®, Therios® etc.
- **Chlorhexidine + Ophytrium + Azole**: Shampoo – Adaxio®, Douxo Pyo S3®, Malaseb®, Microbex®, Clorexodynerm 4%
- **Chlorhexidine/EDTA (aural)**: Mousse/Foam/Sprays/Gel/Wipes – Clorexodynerm Spot Gel/Solution (spray); CLX®, Douxo Pyo S3®
- **Clindamycin**: Antirobe®, Clinacin®, Zodon® etc.
- **Fluoroquinolones (aural)**: Aurizon®, Posatex®
- **Fluoroquinolones (systemic)**: Baytril®, Enrox®, Marbocyl®, Xeden®, (Veraflex®)
- **HCA (hydrocortisone aceponate)**: Cortavance Spray® (control primary inflammation to stop secondary infection); Easotic®
- **Hypochlorous spray/gel**: Contego Ecodermal®, Renasan®, Vetericyn VF™
- **Other AFs (antifungals) (aural)**: Aurizon® (clotrimazole), Otomax® (nystatin)
- **PCMX/EDTA/acid/monosaccharides**: EpiOtic, Sancerum®, Surosolve®

- BSAVA Client Information sheets are available on-line for Antibacterials, Steroids, Ketoconazole & Itraconazole
- Pay good attention to clinical practice, hygiene and infectious disease control
- Understand how and why antimicrobial resistance arises & spreads & hence use antimicrobials appropriately
- Seldom ever rely on systemic antimicrobials alone
- Perform cultures and antibacterial sensitivity testing whenever possible
  - Use Laboratory with MALDI-TOF - provide relevant clinical history incl. treatments used, sensitivity will be tested taking these drugs into account, as well as the drugs that can be used in the specific clinical condition involved, plus both systemic & topical antimicrobials can be tested if requested
  - Do not accept a culture result of *Staphylococcal sp.* – actual speciation mandatory
  - Aural C&S is costly & relevance of the results is questionable as much higher AB concentrations are attainable by topical aural application plus efficacy of systemic antibacterials is unproven with treatment of bacterial otitis
- Likely future new (or re-released) products with antimicrobial ingredients will include:
  - Topical: benzoyl peroxide; microsilver; more antimicrobial peptides, (bacteria species-specific) bacteriophage viruses
  - Systemic: monoclonal antibodies (bacteria species-specific)