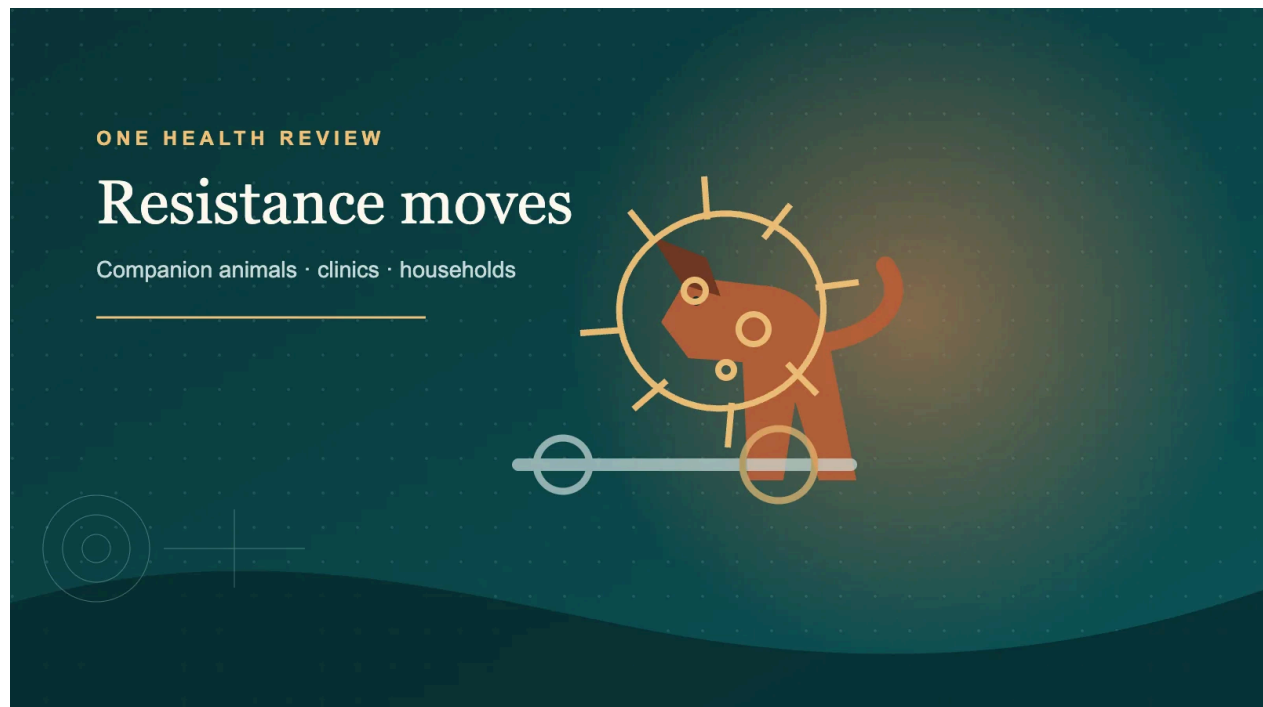


REVIEW ARTICLE

Antimicrobial resistance at the companion animal–human interface: a One Health review

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Abstract

Context: Dogs, cats and people share homes, microbiota, healthcare environments and antimicrobial exposures.

Evidence: Resistant organisms and resistance determinants can move in both directions, although detection of a shared strain does not by itself establish direction or frequency of transmission.

Practice implications: Culture-guided treatment, diagnostic stewardship, infection prevention, audit and communication across veterinary and human health are complementary.

Conclusion: Companion-animal antimicrobial stewardship is most effective when embedded in a One Health surveillance and infection-control system.

Keywords: antimicrobial resistance; companion animals; One Health; stewardship; infection prevention

1. Shared ecosystems

Companion animals live in close physical contact with people and may attend clinics where antimicrobial use and susceptible patients concentrate. Weese [1] framed

resistance in this setting as a connected ecological problem rather than a risk located in one species. Resistant bacteria may be acquired from animals, people, food or the wider environment.

2. Interpreting transmission evidence

Finding similar resistant organisms in a pet and owner supports possible exchange but does not necessarily show who acquired the organism first. Household members also share exposures. Risk assessment should distinguish colonisation, infection and transient contamination and avoid overstating evidence from small cross-sectional studies [3].

3. Priority settings

Extended-spectrum beta-lactamase-producing Enterobacterales, methicillin-resistant staphylococci and multidrug-resistant Gram-negative organisms matter because treatment options may be limited. Referral hospitals, intensive care, wounds, urinary disease and repeated antimicrobial courses can increase selection pressure. European synthesis shows substantial variation in surveillance methods [4].

4. Stewardship in practice

Stewardship begins before a prescription. Clinicians should confirm that bacterial infection is plausible, collect samples when results will change management, and use local susceptibility data. Empirical therapy should be reviewed when culture results arrive. Rendle [2] notes that stewardship must preserve effective therapy for genuine bacterial disease.

5. Infection prevention

Hand hygiene, environmental cleaning, equipment separation and barrier precautions

reduce transmission regardless of resistance mechanism. Clinics need practical policies for high-risk patients and communication at referral. At home, owners usually need clear proportionate hygiene advice rather than isolation of the animal.

6. Surveillance

Comparable laboratory methods, animal-level denominators and separation of clinical from screening isolates improve surveillance. Human and veterinary teams need defined pathways for unusual clusters while respecting privacy and avoiding blame.

7. Conclusions

One Health stewardship combines accurate diagnosis, careful prescribing, infection control and interoperable surveillance. These measures protect animals and people without treating pets as hazards.

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