



# Implications of Telehealth for Antibiotic Stewardship for Companion and Agricultural Animals

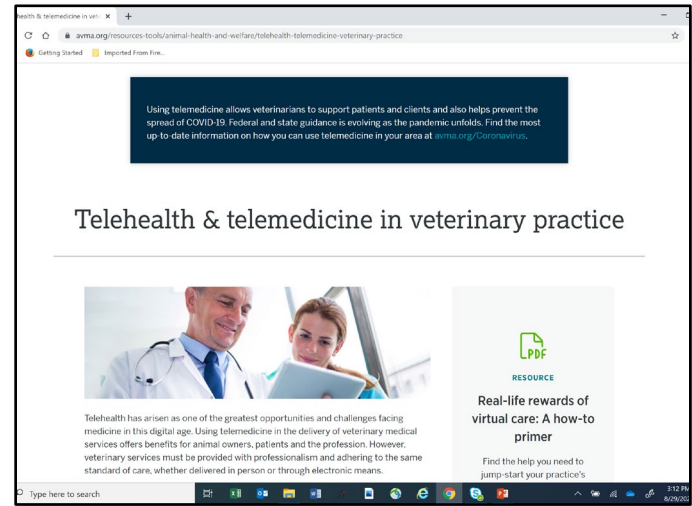
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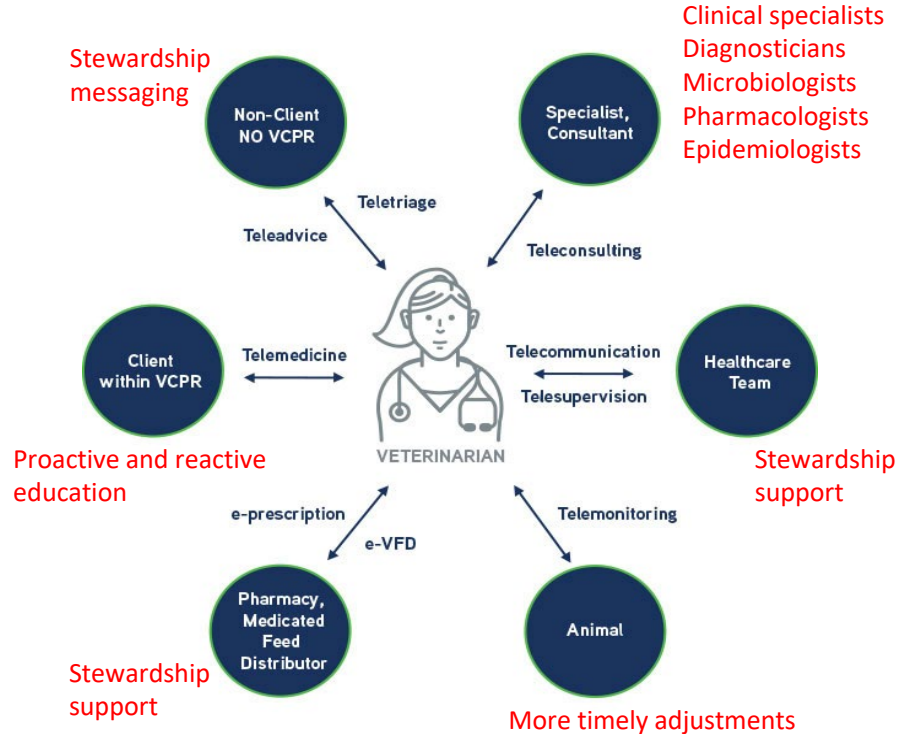
# Current initiatives—Antimicrobial stewardship and Telehealth (Connected care)

- **Antimicrobial stewardship framework**
  - [Definitions \(prevention, control, treatment\)](#)
  - [Core principles](#)
  - [Antimicrobial-resistant pathogens affecting animal health in the US](#)
- **Resources for implementation**
  - [Webcenter](#)
  - [Core principles flyer](#)
  - [Veterinary stewardship checklist](#)
  - [Species-specific resources, including for clients](#)



[www.avma.org/telemedicine](http://www.avma.org/telemedicine)

# Better patient health, Better stewardship



- Multiple intervention points (disease prevention, control, treatment; education)
- Engage attending veterinarian, patients, clients/caretakers/owners, specialists

# Practical examples—Early, but potential is there

- Regular remote check-ins (photos, video) of chronic health issues, such as dogs with allergic dermatitis and intermittent pyoderma. Proactively treat pruritis, avoid secondary bacterial infection
- Targeted metaphylaxis for respiratory disease in beef cattle via chute-side diagnostics and telemedicine
- Early mastitis detection in dairy cattle via wearable (e.g., rumination, activity/resting) or milking system monitors, allowing earlier intervention and better targeting of therapy
- Using telemedicine to increase farm biosecurity through earlier disease identification and reductions in human traffic on pig and poultry farms
- Better integration of specialists—diagnostic stewardship and antibiograms



# Veterinarian-client-patient relationship

## Relationship and oversight it affords are key

- Veterinarian assumes responsibility for animal's health
- Client agrees to comply with veterinarian's instructions
- Veterinarian has **sufficient knowledge** of the animal(s) to make a general diagnosis
- Veterinarian assumes responsibility for follow-up care
- Veterinarian maintains patient records

*The veterinarian-client-patient relationship (VCPR) is the basis for interaction among veterinarians, their clients, and their patients and is critical to the health of animals.*

# Obtaining “sufficient knowledge”

- VCPR may be defined at the state level and is defined at the federal level
- Federal VCPR
  - Applies to extra-label drug use and Veterinary Feed Directives
  - Requires that the veterinarian has recently seen and is personally acquainted with the keeping and care of the animal(s) by virtue of an examination and/or medically appropriate and timely visits to premises where animal(s) are kept
  - If the state VCPR doesn't include key elements of the federal VCPR, must meet the federal VCPR
- States vary, they may
  - Allow establishing a VCPR via telemedicine (no in-person exam)
  - Disallow establishing a VCPR via telemedicine
  - Not define the VCPR (default to federal VCPR for on-label prescriptions, extra-label drug use, and VFDs)



# COVID-19 and telemedicine

- Federal agencies (FDA, DEA) and some states are applying regulatory discretion to enforcement around establishing the VCPR via telemedicine
- Veterinarians have increased use of telemedicine to protect their teams and clients while continuing to provide patient services
- Other than teletriage, majority of use appears to be within established VCPRs
- Not first strategy<sup>1</sup>—adoption/learning curve
- To what extent will use continue/expand in the “next normal”?

<sup>1</sup>AVMA survey of practices during COVID-19, April 2020; 2017 respondents



# Potential challenges for antimicrobial stewardship

- Remotely established VCPRs—Accuracy of diagnosis without a hands-on examination/diagnostics?
- Online retailers
  - Prescription-required products
  - Over-the-counter products
- Human healthcare experience (mixed)
  - Increased prescribing of antibiotics for pediatric respiratory ailments when telemedicine used<sup>1</sup>
  - Telehealth-based antimicrobial stewardship programs implemented in hospitals resulted in reduced use of broad-spectrum antibiotics<sup>2</sup>



<sup>1</sup>Foster CB, Martinez KA, Sabella C, et al. Patient satisfaction and antibiotic prescribing for respiratory infections by telemedicine. *Pediatrics*. 2019;144(3):e20190844. doi:10.1542/peds.2019-0844

<sup>2</sup>Shively NR, Moffa MA, Paul KT, et al. Impact of a telehealth-based antimicrobial stewardship program in a community hospital health system. *Clinical Infect Dis* 2020;71(3):539-545.



# Closing thoughts

- Telehealth has the potential to improve stewardship for companion and agricultural animals
- Appropriate veterinary oversight is key, including careful consideration of how to establish the veterinarian-client-patient relationship (VCPR)
- Must choose cases thoughtfully
  - Veterinary oversight (VCPR)
  - Type of physical/diagnostic information needed and how that can be responsibly acquired
  - Access to medical record
  - Ability to make an in-person appointment if needed
  - Follow-up availability
- Consider non-patient-centered opportunities for use of telehealth
  - Specialist consultations
  - Education, including for clients/caretakers/animal owners

**Animal pathogens of heightened concern**

	Aminoglycoside	Ampicillin	Carbapenem	Cephalosporin	Fluoroquinolone	Lincosamide	Meropenem	Penicillin	Fluoroquinolone	Sulfonamide	Tetracycline	Trimethoprim
<i>Aeromonas</i> spp		●									●	●
<i>Campylobacter jejuni</i>	●				●	●	●				●	●
<i>Edwardsiella</i> spp		●									●	●
Enterobacteriales	●	●		●	●		●	●	●	●	●	●
<i>Enterococcus</i> spp					+		●	●				
<i>Flavobacterium psychrophilum</i>		●									●	●
<i>Moraxella</i> spp							●				●	
<i>Ornithobacterium rhinotracheale</i>								●		●	●	
Pasteurellaceae					●		●	●	●	●	●	●
<i>Pseudomonas aeruginosa</i>	●		●		●							
<i>Salmonella</i> spp	●	●		●	●		●	●	●	●	●	●
<i>Staphylococcus</i> spp	●			●	●	●		●	●		●	●
<i>Streptococcus</i> spp				●	●			●				
<i>Vibrio</i> spp	●	●						●			●	●

● Dogs & Cats   ● Cattle   ● Chickens & Turkeys   ● Equine   ● Fish & Shrimp   ● Sheep & Goats   ● Swine

\*Note: Some of the resistance noted for these organisms has been long-established

# THANK YOU FOR YOUR TIME

