

# Communication Strategies to Influence Antibiotic Use Decisions by Dairy Veterinarians

David Kelton and Sydney Pearce

Department of Population Medicine

University of Guelph

**Advancing the Science of KTT in Agri-Food**

**October 28, 2020**



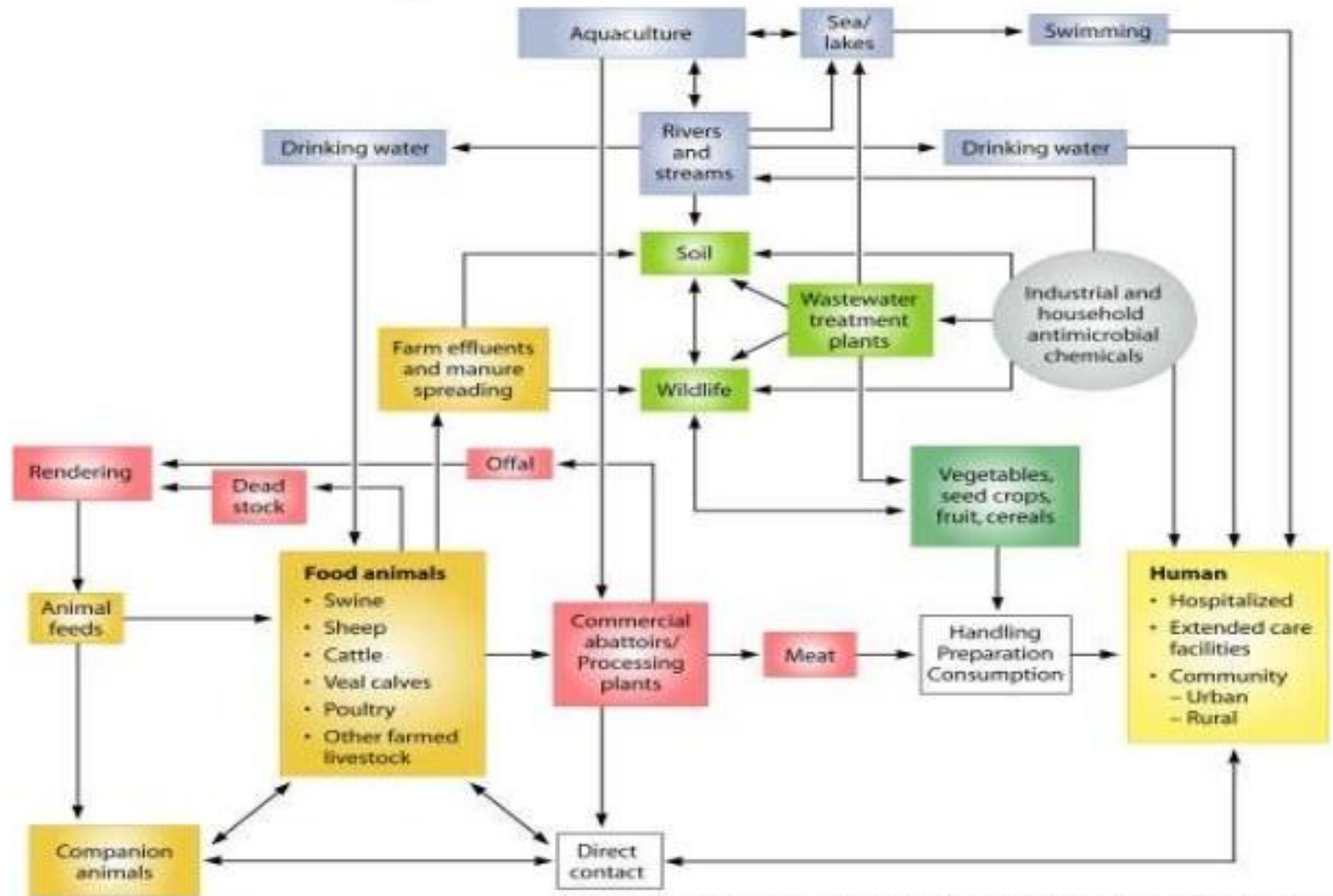
Ontario Veterinary College  
POPULATION MEDICINE



**DAIRY**   
**at GUELPH**  
CANADA'S DAIRY UNIVERSITY

# The Problem:

## AMR: A Complex Problem

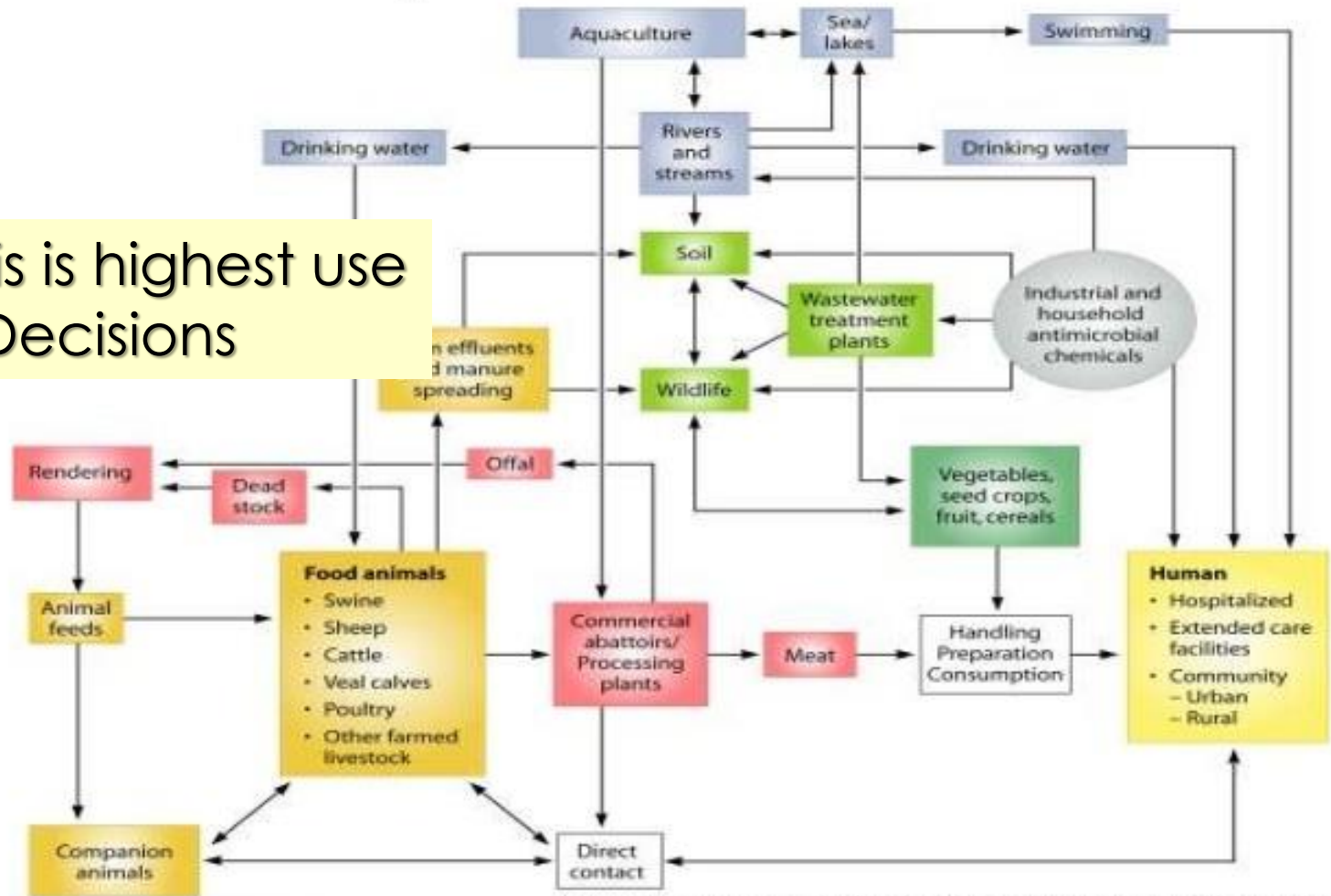


Davies & Davies. *Microbiol Mol Biol Rev.* 2010 Sep; 74(3): 417-433.

# The Problem: Dairy Industry Context

## AMR: A Complex Problem

- Mastitis is highest use
- AMU Decisions



Davies & Davies. *Microbiol Mol Biol Rev.* 2010 Sep; 74(3): 417-433.

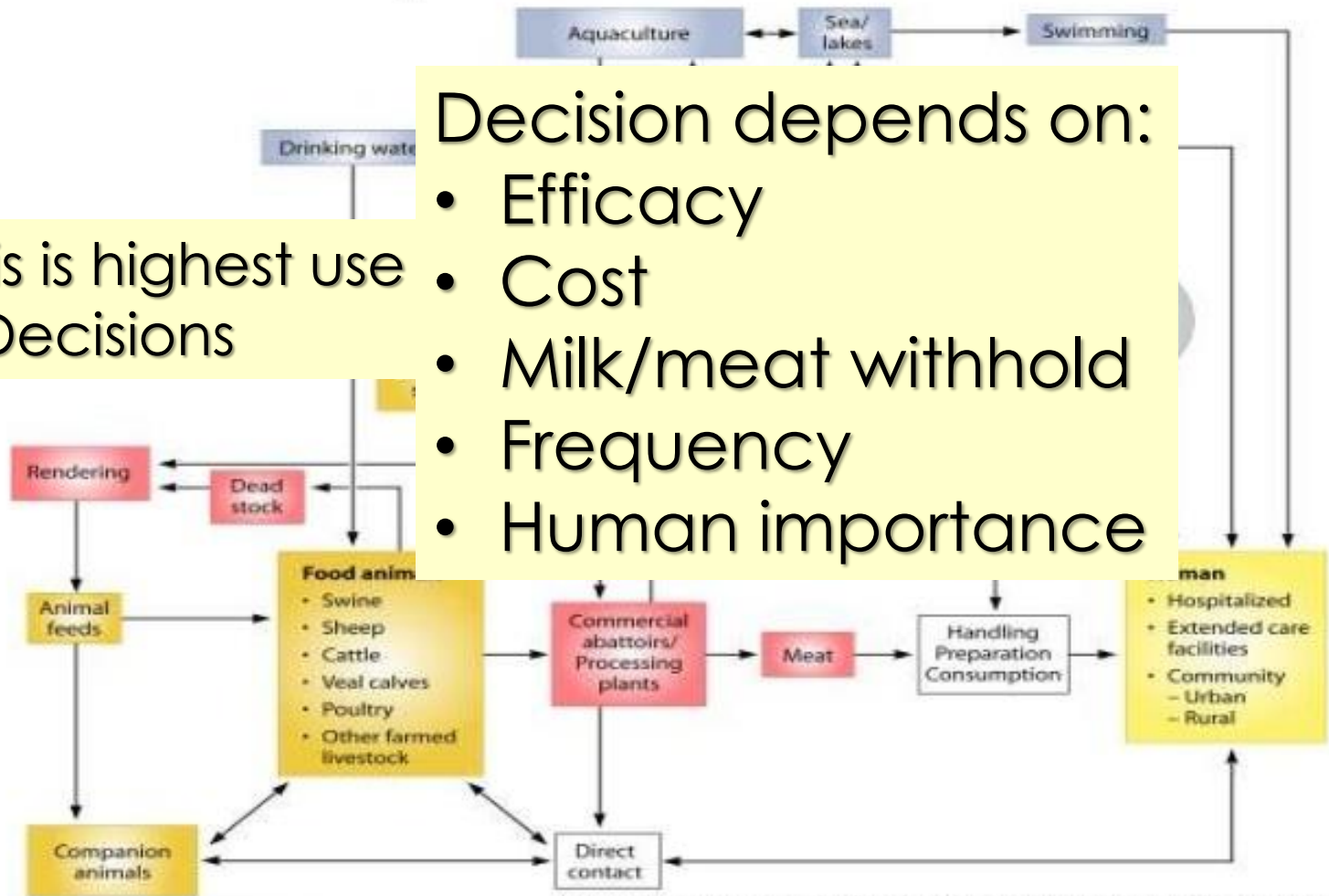
# The Problem: Dairy Industry Context

## AMR: A Complex Problem

- Mastitis is highest use
- AMU Decisions

Decision depends on:

- Efficacy
- Cost
- Milk/meat withhold
- Frequency
- Human importance



Davies & Davies. *Microbiol Mol Biol Rev.* 2010 Sep; 74(3): 417-433.

# The Expectation:

That decisions are evidence-based!

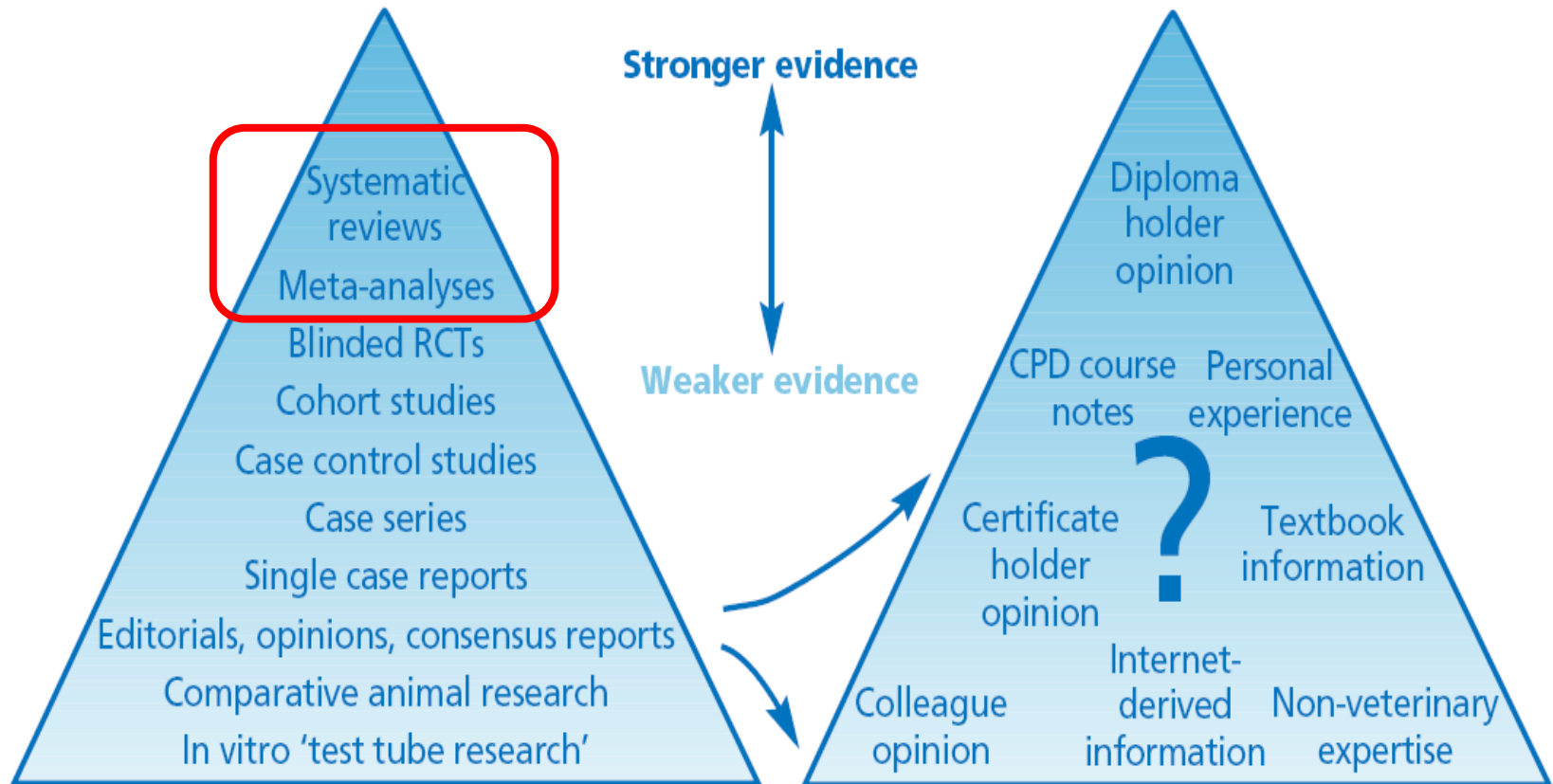
Evidence-based veterinary medicine:

“the conscientious and judicious use of the **current best evidence** in the health care of individuals and populations....integrating individual clinical expertise with the best available external clinical evidence **from systematic research**”

Sackett et al., 2006

# The Expectation:

## Hierarchy of Strength of Research Evidence



Cockroft & Holmes, 2004

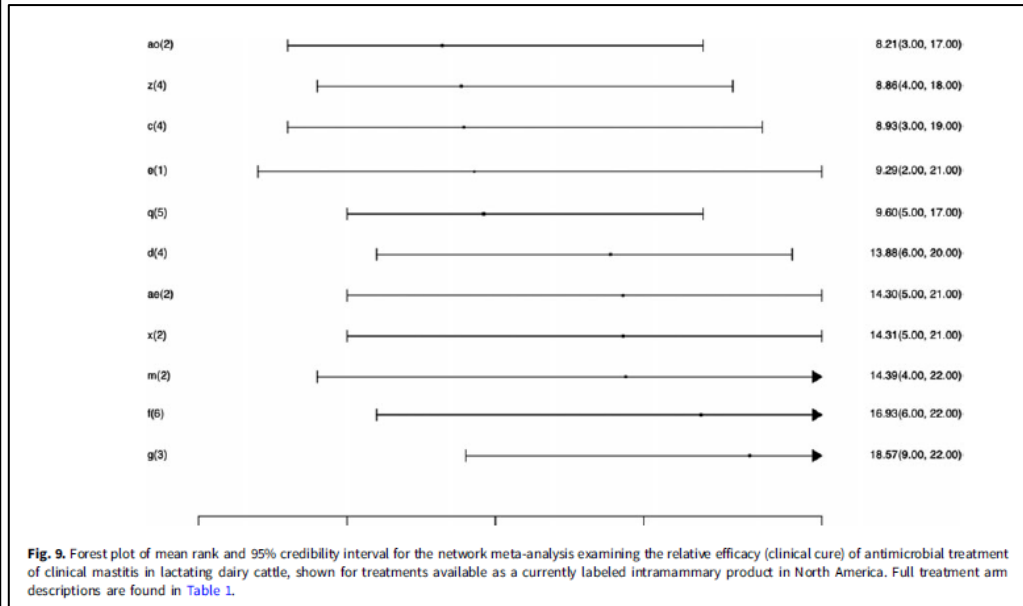
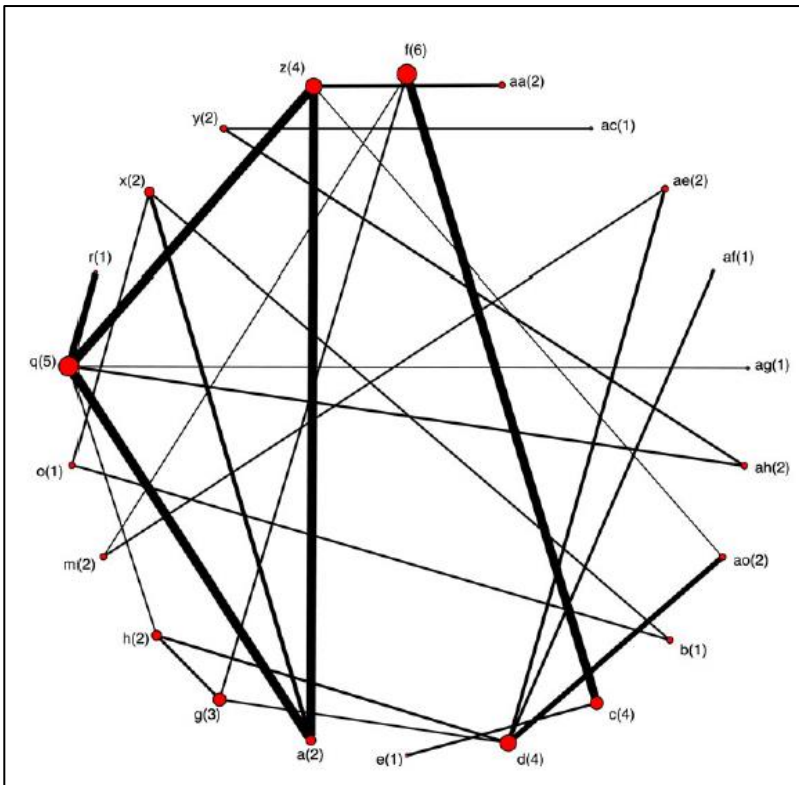
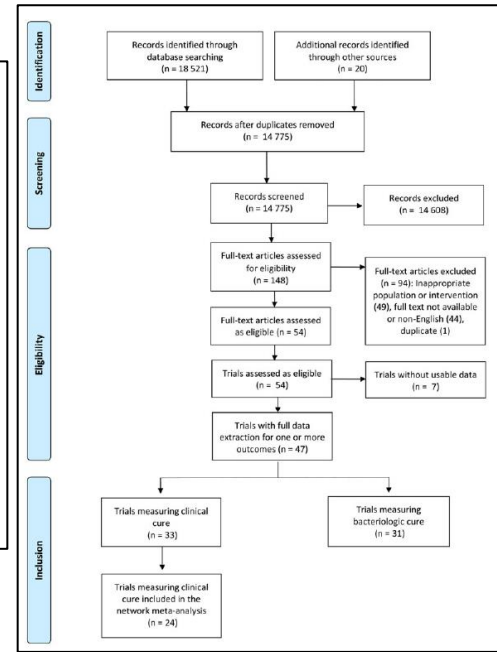
Systematic Review

**Cite this article:** Winder CB, Sargeant JM, Hu D, Wang C, Kelton DF, Godkin MA, Churchill KJ, O'Connor AM (2019). Comparative efficacy of antimicrobials for treatment of clinical mastitis in lactating dairy cattle: a systematic review and network meta-analysis. *Animal Health Research Reviews* 20, 229–246. <https://doi.org/10.1017/S1466252319000318>

# Comparative efficacy of antimicrobials for treatment of clinical mastitis in lactating dairy cattle: a systematic review and network meta-analysis

C. B. Winder<sup>1</sup>, J. M. Sargeant<sup>1,2</sup>, D. Hu<sup>3</sup>, C. Wang<sup>3</sup>, D. F. Kelton<sup>1</sup>, M. A. Godkin<sup>4</sup>, K. J. Churchill<sup>2</sup> and A. M. O'Connor<sup>4</sup>

<sup>1</sup>Department of Population Medicine, University of Guelph, 50 Stone Road East, Guelph, Ontario, N1G 2W1, Canada; <sup>2</sup>Centre for Public Health and Zoonoses, University of Guelph, 50 Stone Road East, Guelph, Ontario, N1G 2W1, Canada; <sup>3</sup>Department of Veterinary Diagnostic and Production Animal Medicine, College of Veterinary Medicine, Iowa State University, Ames 50011-3619, USA and <sup>4</sup>Ontario Ministry of Agriculture, Food, and Rural Affairs, 1 Stone Road West, Guelph, Ontario, N1G 4Y2, Canada



**Fig. 9.** Forest plot of mean rank and 95% credibility interval for the network meta-analysis examining the relative efficacy (clinical cure) of antimicrobial treatment of clinical mastitis in lactating dairy cattle, shown for treatments available as a currently labeled intramammary product in North America. Full treatment arm descriptions are found in Table 1.

# The Challenge: New Knowledge

Searching, **acquiring** and reading primary research

- time and access

Many hours spent **traveling** to farms

- format of new knowledge

**Learning styles** and preferences

- variation among individuals





# Learning Styles

## Part I – Your Brain PathWays –Summary Profile David Kelton

---



Brain PathWays™  
The Neuroscience of You

### SENSORY PATHWAYS CHARACTERISTICS



**Learning, Working and Remembering:** Your strongest sensory brain pathway is **Visual**. This means you learn, work and remember best by seeing visual media, email, written instructions, documents and progress reports. Your secondary sensory pathway is **Kinesthetic**. You like hands-on activities, movement, action, touch and things to physically do. You remember best when receiving both **Visual** and **Kinesthetic** sensory inputs. To make decisions and move forward, situations need to “*look right and feel right.*”

Copyright 1994, 1997, 2003-2009 The HADRON Group, Inc. All Rights Reserved.

# HOW CAN WE INCREASE THE **IMPACT** OF OUR RESEARCH?



Accessible **knowledge translation** tools that address human **learning preferences and individual contexts** may be the key to reaching target populations such as dairy veterinarians.

# The Scenario:

- Antibiotics used vary in importance to human medicine
- Recent systematic reviews aimed at antibiotic use
- Efficacy of antibiotics to treat critical diseases (mastitis)
- Stewardship BPs are only helpful if translated to decision-makers
- Intensive knowledge translation (KT) methods significantly increased health behaviour adoption in previously published work in human pain management
- **Objective:** Determine most effective KT methods for disseminating antibiotic BPs

# The Methods

4 KT tools to deliver relative efficacy:

- Published manuscripts



- Podcast series



- Website



- Mobile app



80 Ontario dairy veterinarians in randomized control trial

Questionnaires distributed before and 2 months to assess:

- Changes in AMU decision-making
- Changes in antibiotics prescribed in given situations
- Preferences for KT tool(s)

# The Deliverables

- Results can inform the most efficacious KT method to disseminate information to busy veterinarians and enable stewardship
- Tools will remain active for broader use in dairy industry
- Individual characteristics will be assessed to determine if tool recommendations can be tailored to the individual
- Tools may be applied to other OH information for dissemination

# Thank You!

