

# Antimicrobial stewardship: towards a more inclusive intersectoral definition and framework

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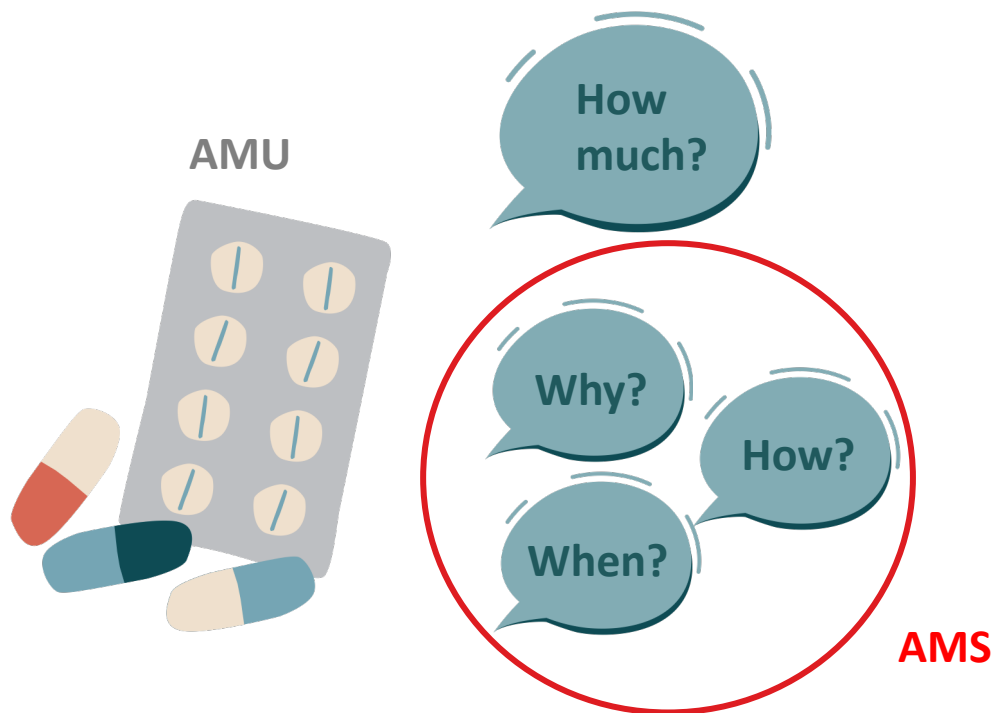
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**AUSVET**  
Europe



# Why antimicrobial stewardship (AMS)?



# What is stewardship?

**In general:** Responsibility for valuable and limited resource, guardianship



## For antimicrobials:



First mention of AMS –  
response to rapidly  
increasing AMR in hospitals

Later extended to  
veterinary and  
community settings

### Antimicrobial Stewardship in Animals

J. Scott Weese, Stephen W. Page, and John F. Prescott

NEW HORIZONS  
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### Does Antibiotic Restriction Prevent Resistance?

John E. McGowan, Jr., MD; Dale N. Gerding, MD

### Outpatient antibiotic use in Europe and association with resistance: a cross-national database study

Herman Goossens, Matus Ferech, Robert Vander Stichele, Monique Elseviers, for the ESAC Project Group\*

1990s

2000s

Still no clear definition

## Challenges with using the term “AMS”

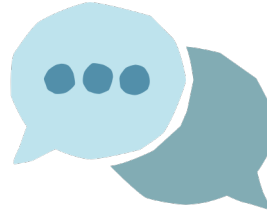
AMS is used interchangeably to mean different things

- A mindset
- An approach or strategy
- An intervention coordinated by a dedicated team at a hospital institution
- Decisions made by an individual doctor, vet, patient, or farmer

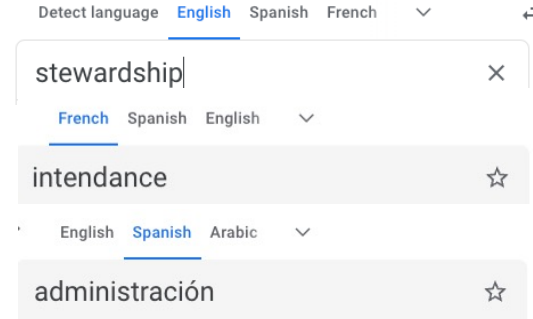
# Challenges with using the term “AMS”

AMS is used interchangeably to refer to different concepts

- Difficult to translate into languages other than English
- Infrequent use in everyday language



## Issues of language



# Challenges with using the term “AMS”

AMS is used interchangeably to refer to different concepts

Issues of language

Why does it matter?



**Communication**



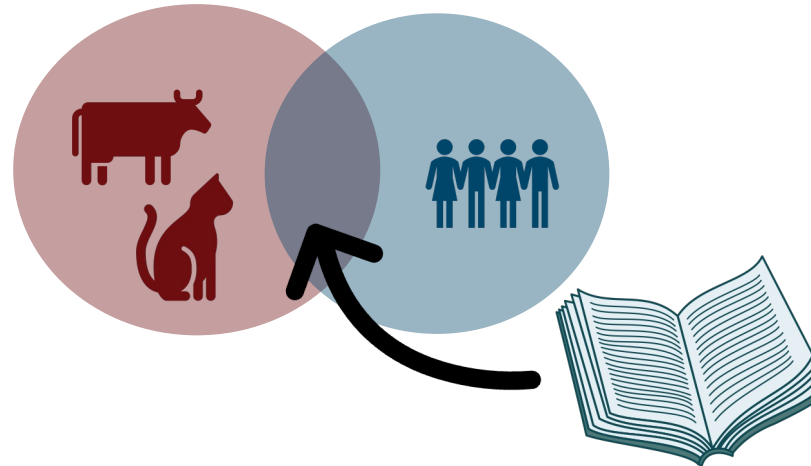
**Implementation**



**Evaluation**

# Objectives

1. Identify how antimicrobial stewardship is defined in different contexts and **highlight commonalities**
2. Develop an **inclusive, intersectoral working definition** of antimicrobial stewardship



## Methodology – boundary object theory

An approach first applied in science and technology studies to explain how actors from **different scientific communities** (and different social worlds) **collaborate and cooperate without coming to consensus**

Institutional Ecology, 'Translations' and Boundary Objects: Amateurs and Professionals in Berkeley's Museum of Vertebrate Zoology, 1907–39

Susan Leigh Star and James R. Griesemer

**Boundary objects:** *“scientific objects which both inhabit several intersecting social worlds and satisfy the informational requirements of each of them”* (Star and Griesemer, 1989)



# Methodology – what is a boundary object?

Can be **concrete** (data repositories, maps, forms)...



... or **abstract** (ideas, classification systems, concepts)



<https://promedmail.org>

## *Synthesis*

### **Focusing the Meaning(s) of Resilience: Resilience as a Descriptive Concept and a Boundary Object**

*Fridolin Simon Brand<sup>1</sup> and Kurt Jax<sup>2</sup>*

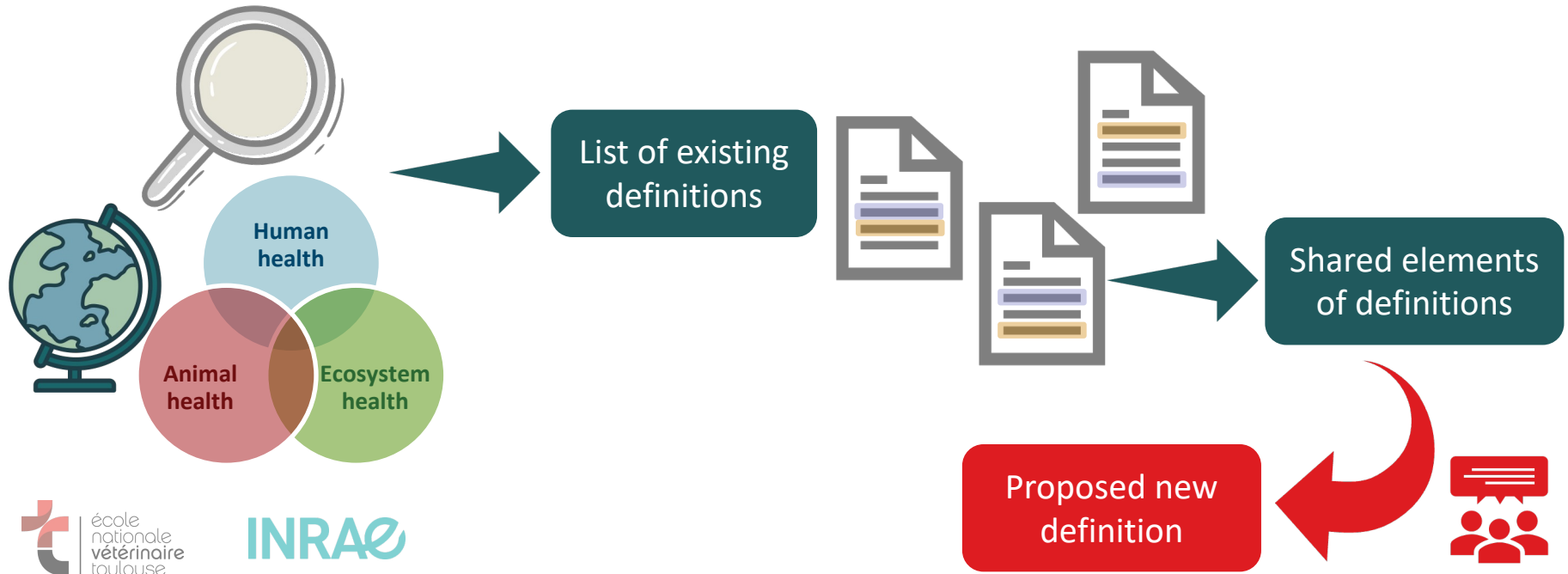
### **Ecosystem Services as Boundary Objects for Transdisciplinary Collaboration**

Cara Steger<sup>a,\*</sup>, Shana Hirsch<sup>b</sup>, Cody Evers<sup>c</sup>, Benjamin Branoff<sup>d</sup>, Maria Petrova<sup>e</sup>, Max Nielsen-Pincus<sup>f</sup>, Chloe Wardropper<sup>g</sup>, Carena J. van Riper<sup>h</sup>



# Methodology – boundary object theory

How we used boundary object theory in practical terms:



## What did we find?

### DEFINITION

Antimicrobial stewardship refers to **coordinated interventions designed to improve and measure the appropriate use** of antimicrobial agents by promoting the selection of the optimal antimicrobial drug regimen including dosing, duration of therapy, and route of administration.

Policy Statement on Antimicrobial Stewardship by the SHEA, IDSA, PIDS (SHEA, 2012)

## Antimicrobial stewardship for veterinarians defined

Antimicrobial stewardship describes measures that can help mitigate the public health crisis and preserve the effectiveness of available antimicrobial agents.

(Lloyd and Page, 2018)

Antimicrobial stewardship refers to the **actions veterinarians take individually and as a profession** to preserve the effectiveness and availability of antimicrobial drugs through conscientious oversight and responsible medical decision-making while safeguarding animal, public, and environmental health.

AVMA definition <https://www.avma.org/resources-tools/avma-policies/antimicrobial-stewardship-definition-and-core-principles>

The term “antimicrobial stewardship” is used to describe the **multifaceted and dynamic approaches** required to sustain the clinical efficacy of antimicrobials by optimizing drug use, choice, dosing, duration, and route of administration, while minimizing the emergence of resistance and other adverse effects. The word stewardship implies the **obligation to preserve something of enormous value for future generations**, and resonates in a way that “prudent use” or “judicious use” does not.

(Guardabassi and Prescott, 2015)

*Antimicrobial stewardship* is the term increasingly used in medicine to describe the **multifaceted approaches** required to **sustain the efficacy of antibiotics** and minimize the emergence of resistance. (Woope et al., 2013)

(Weese et al., 2013)

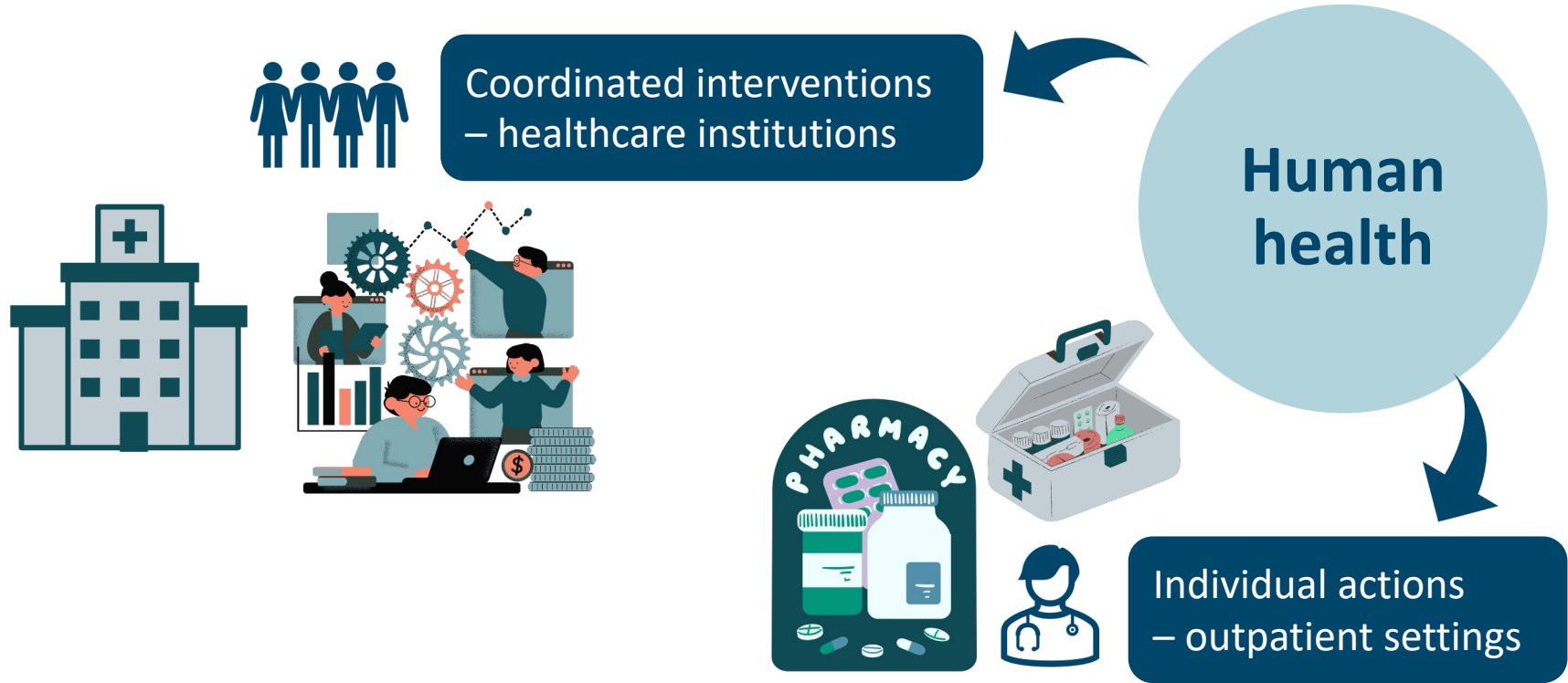
Many definitions!

Many definitions! ... antibiotic prescribing; to improve antibiotic ... antibiotics are only prescribed and ... used when needed; to minimize misdiagnoses or delayed diagnoses leading to underuse of ... antibiotics; and to ensure that the right drug, dose, and duration are selected when an antibiotic ... is needed.<sup>1,6</sup> ... CDC ... Core Elements of Outpatient Antibiotic Stewardship (Search ...

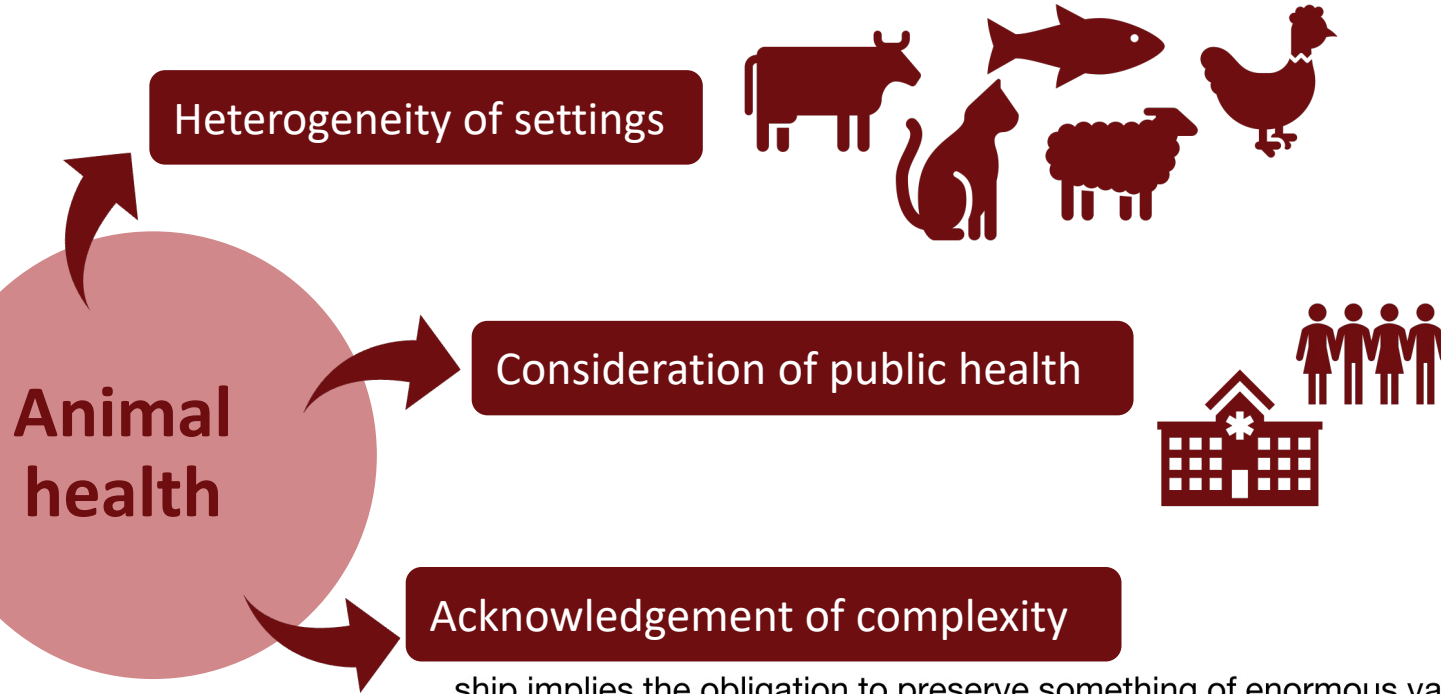
CCDC guidance - Core Elements of Outpatient Antibiotic Stewardship (Sanchez, 2016)

Antimicrobial stewardship encompasses all the individual and collective actions that medical professionals take to preserve the efficacy of antimicrobials. It is a one-health problem, affecting animals and humans. (Cazer et al., 2023)

## Existing definitions of AMS



## Existing definitions of AMS



The word stewardship implies the obligation to preserve something of enormous value for future generations, and resonates in a way that “prudent use” or “judicious use” does not.

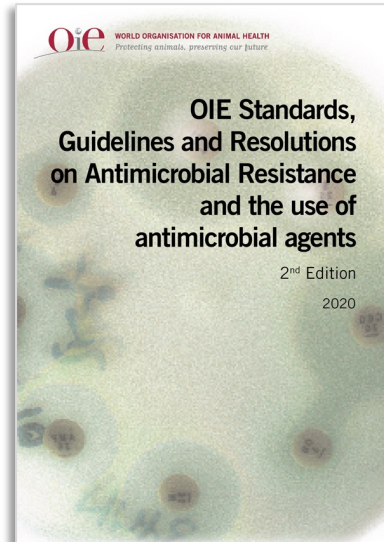
(Guardabassi and Prescott, 2015)

# Existing definitions of AMS

International  
organisations

No endorsed definition

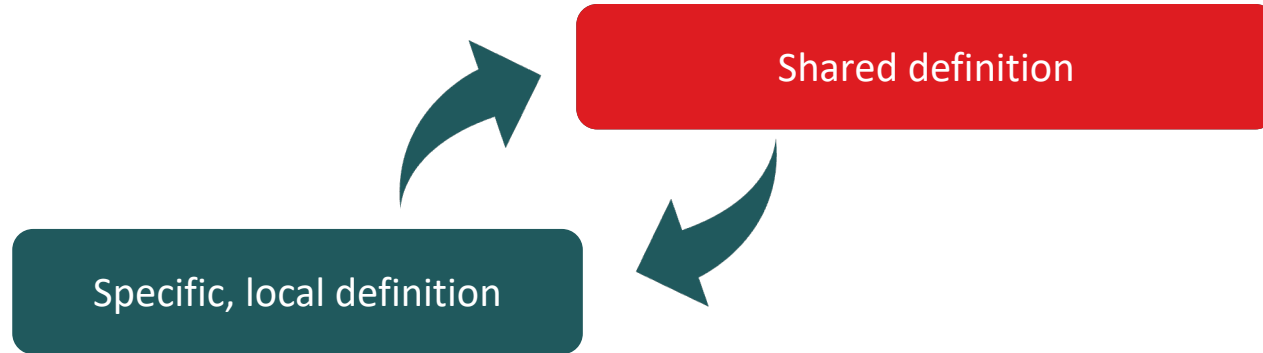
Preference for 'judicious',  
'prudent', 'responsible'



ANTIMICROBIAL RESISTANCE  
TERMS

CHAPTER 6.10.  
**RESPONSIBLE AND PRUDENT USE OF  
ANTIMICROBIAL AGENTS  
IN VETERINARY MEDICINE**

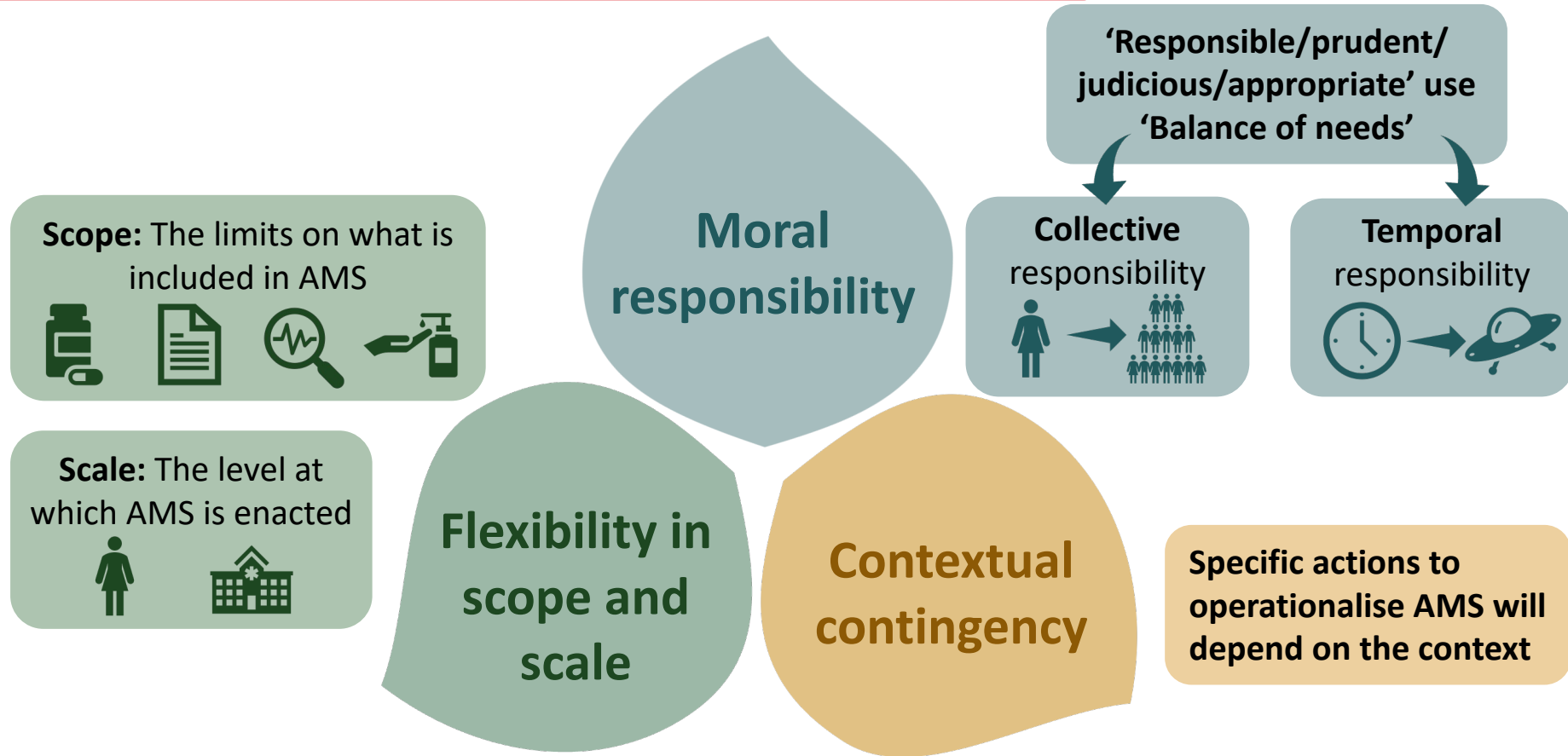
## What did we find?



AMS holds key characteristic of a boundary object

Dynamic use  
“tack back-and-forth”

# Shared elements of antimicrobial stewardship





# Definition of antimicrobial stewardship

Flexibility in  
scope and  
scale

## *Antimicrobial stewardship:*

A concept *relevant to and applicable by all* (individuals, communities, and institutions), aiming at *using and prescribing antimicrobials in humans and animals* in a way that *ensures the availability of antimicrobials for individuals in the present day, as well as preserving antimicrobial effectiveness for current and future populations.*




Moral  
responsibility

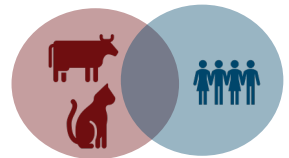
Operationalisation of stewardship includes considerations of whether antimicrobials should be used, the ways in which antimicrobials are used, as well as *the broader context within which these decisions are made.*

Contextual  
contingency

# Implications and application

## Facilitate communication and cooperation on AMS

-  Function as a **communicative tool** for AMS between different sectors
-  **Prompt discussion** for a common definition at international level
-  Encourage **better description** of context-based definitions



Specific, local definition

Shared definition

## Next steps: Operationalisation of AMS definition

### Extension to a **framework for antimicrobial stewardship**



**Implementation:** Facilitate design & implementation of AMS interventions



**Evaluation:** Descriptively assess AMS in case studies



| AMS ELEMENTS          | Description | Indicators |
|-----------------------|-------------|------------|
| AMS objectives        |             |            |
| AMS actors (stewards) |             |            |
| AMS actions           |             |            |
| AMS interventions     |             |            |
| Motivations for AMS   |             |            |
| Capacity for AMS      |             |            |
| Context of AMS        |             |            |
| Outcomes of AMS       |             |            |



Adapted from Bennett et al., 2018

# Acknowledgements



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Ausvet Europe



AUSVET  
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