



# Reducing Antimicrobial use in Animals and Promoting a Mindset Change

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## **Antimicrobial use in animals is result of human behavior/decision**

### **Reduction of antimicrobial use requires adoption of different behaviors:**

- Disease prevention should replace antimicrobial application where possible
- Waive prophylactic use and antimicrobial growth promoters
- Tailored/prudent therapy should replace 'indiscriminate' antimicrobial use
  - Ban highest priority critically important antimicrobials, restrictive use of critically important antimicrobials
  - Use of prescription guidelines, formularies, diagnostics

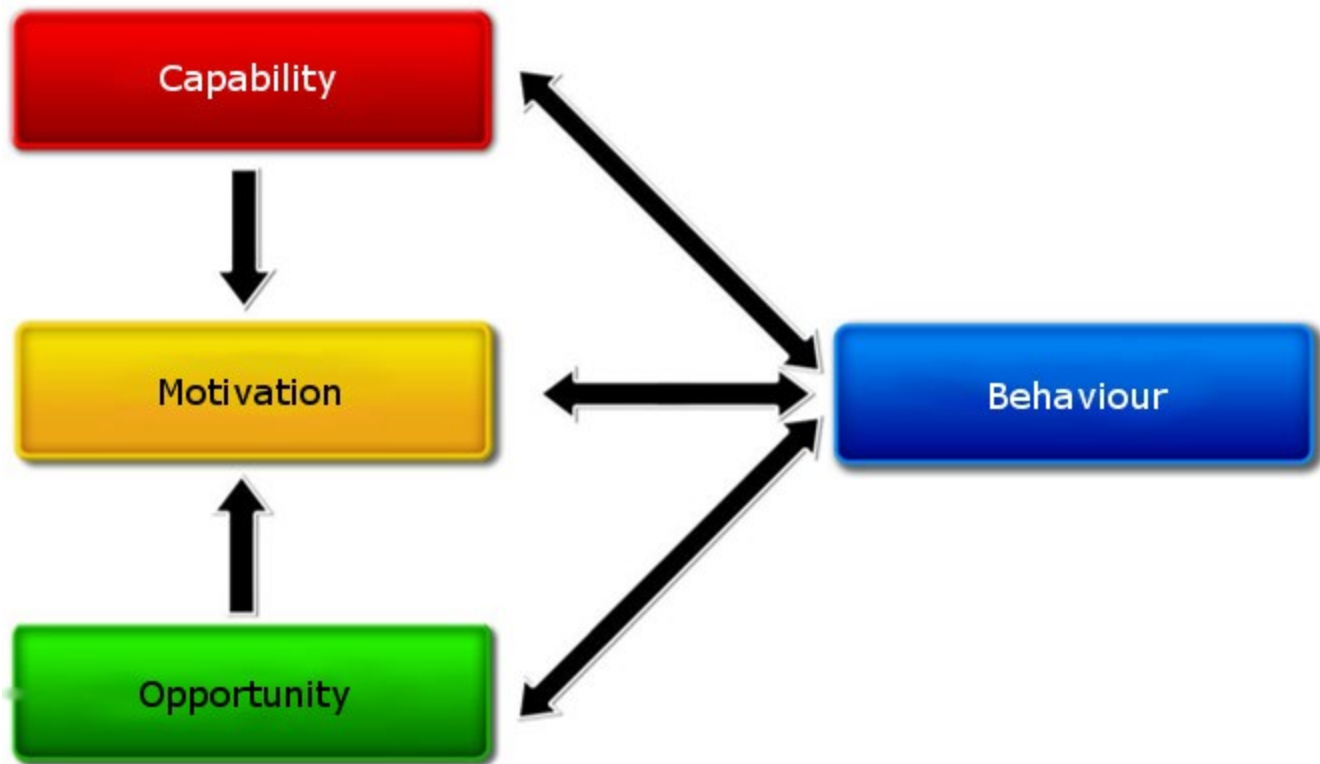
## Human behavior often not based on rational reflections

**=> more/less automatic response on different stimuli:**

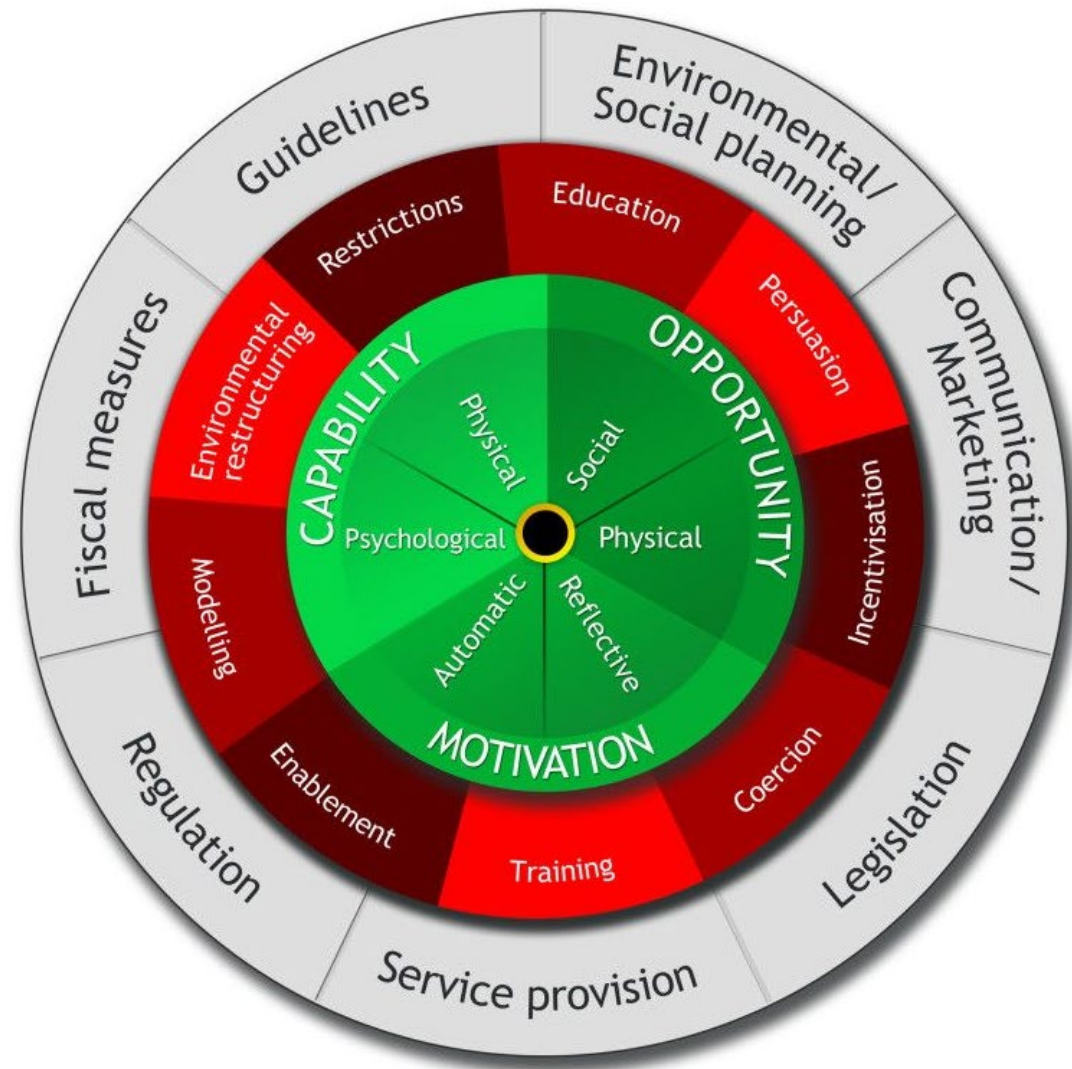
- Internal stimuli (motivation, self-control etc.)
- External stimuli (social environment, physical context etc.)

Understanding these stimuli and the effects on behavioral outcome essential for behavior change interventions

“Why is someone behaving in a certain way and what can be done to change this behaviour?”



- Sources of behaviour
- Intervention functions
- Policy categories



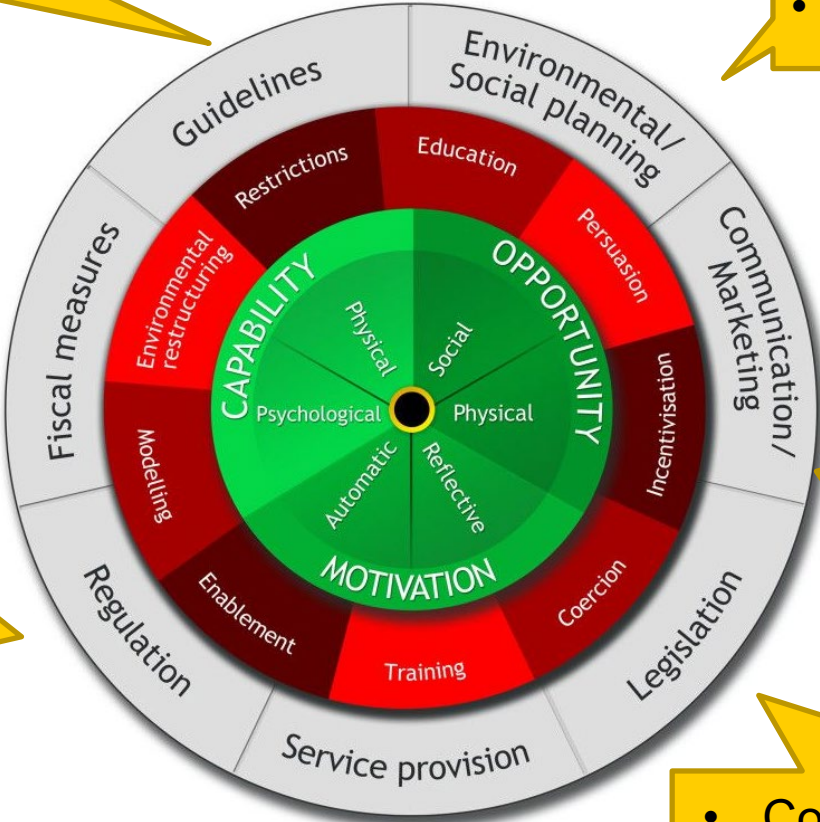
**The behaviour change wheel: A new method for characterising and designing behaviour change interventions**



The Dutch approach

- Veterinary guidelines developed
- Formularies updated

- Public pressure



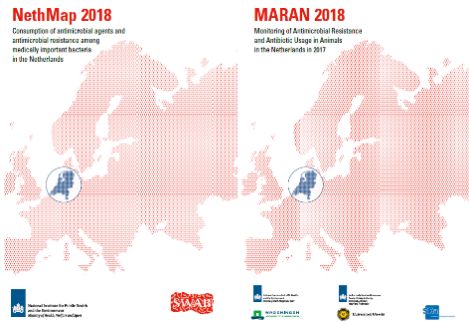
- Usage transparent => benchmarking
- Voluntary restrictions on use HPCI antimicrobials
- 1-on-1 relationship farmer <> vet
  - Farm Health Plan
  - Farm Treatment Plan
- Quality system vets (post grad education)

- Market changes
  - Alternative broiler breeds
  - ABF chains
- Low users less requirements (#vet visits etc.)

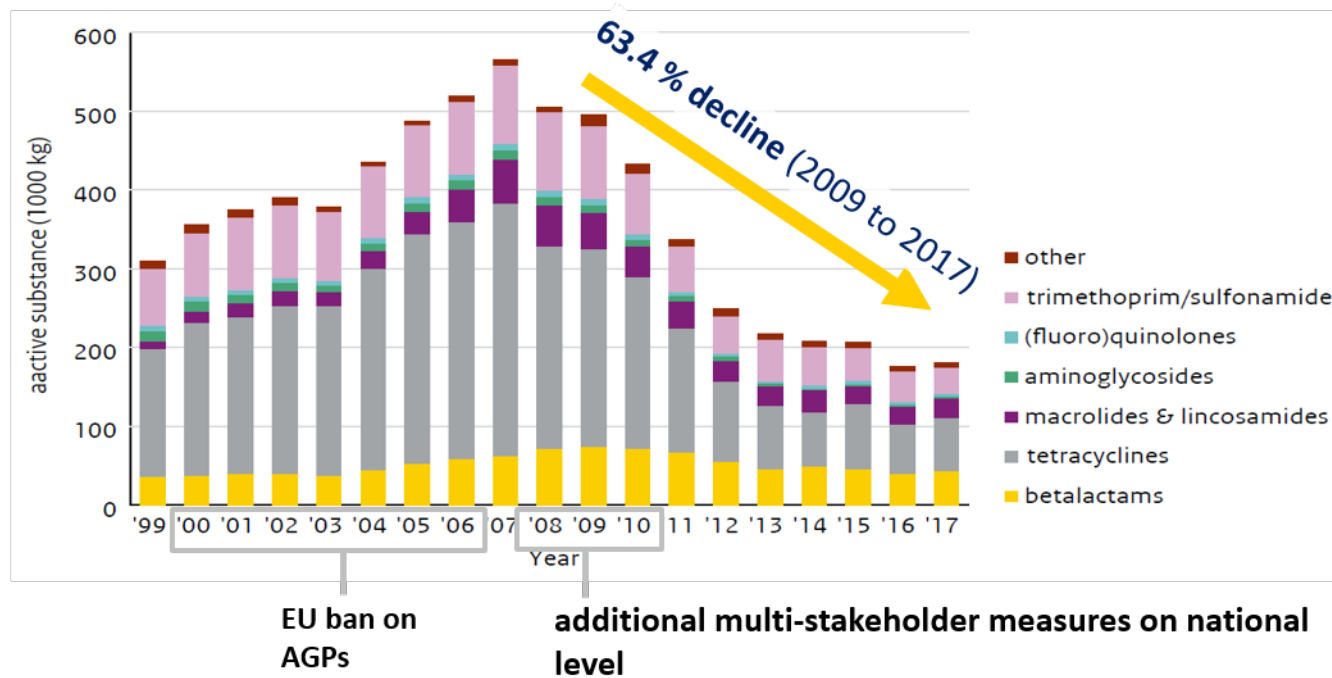
- Workshops/trainings
  - Vets
  - Farmers

- Compulsory reduction targets
- Establishment Veterinary Medicines Institute
- Ban specific antimicrobial classes

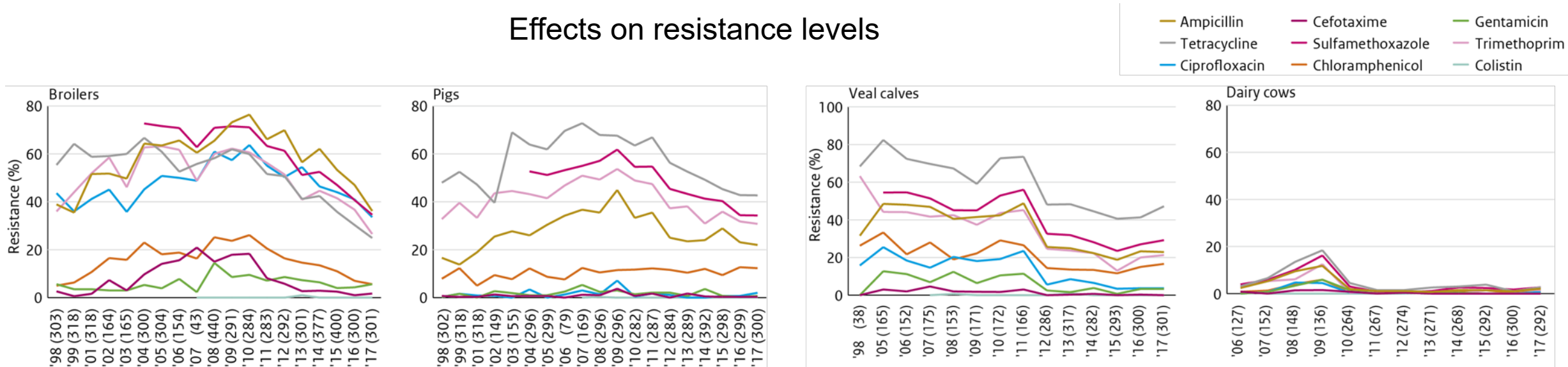




## Effects on veterinary antimicrobial sales



## Effects on resistance levels



# Are we there yet?

Figure A9. 2012 and 2017 DDDA<sub>F</sub> distributions for white veal farms

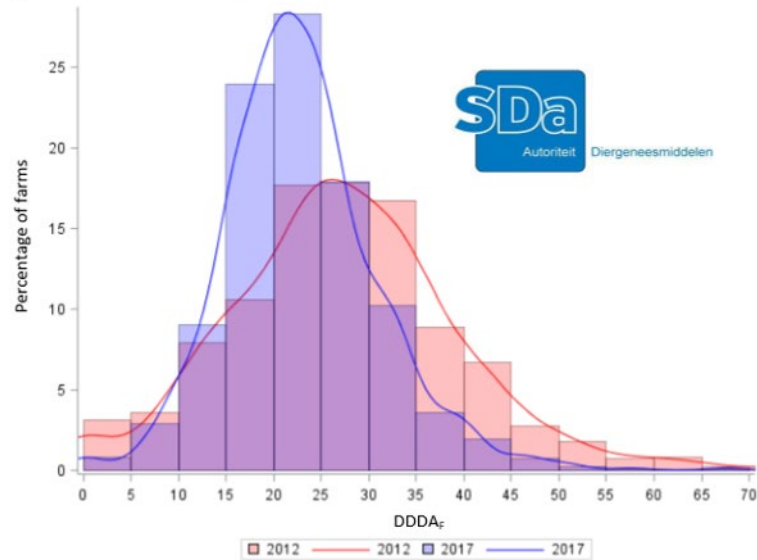
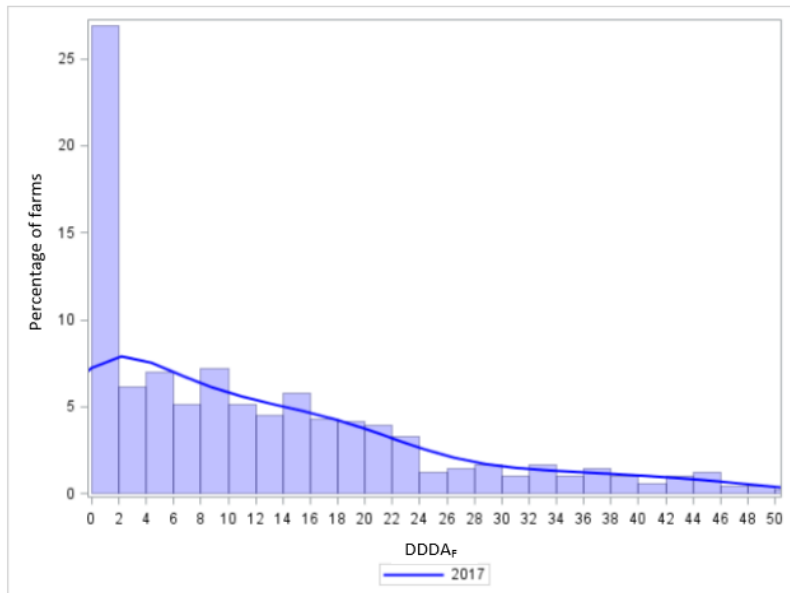


Figure A3. 2017 DDDA<sub>F</sub> distribution for broiler farms with conventional breeds



**Farm A:** Recent building  
55 dairy cows, 9559kg ECM



Antimicrobial  
use: **3.31**  
**DDDA**

**Farm B:** Old building  
103 dairy cows, 9893kg ECM



Antimicrobial  
use: **1.40**  
**DDDA**

# Research projects Critical Success Factors for low antimicrobial use\*

## Veal Calves: Low versus High users

More often smaller herds

More laborers per 1000 calves

More often higher proportion of heifers

More often calves with a higher weight at the start

Both perceive little control over their antimicrobial use

High users do not perceive their antimicrobial use as a problem

Perceived more pressure from their social environment to reduce

## Sows: Low versus High users

More often smaller farms

More often lower number of live born piglets

Vaccinate less

More often have varying treatment durations

Perceived more control over their antimicrobial use

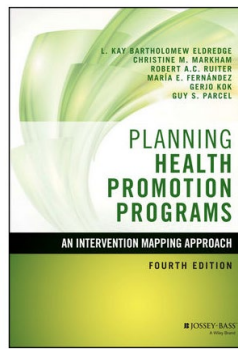
High users do not perceive their antimicrobial use as a problem

Received more information on reduction from their vet and other advisors

Both technical and socio-psychological factors involved in low use of antimicrobials



# VET-ENHANCE Study: Using the Intervention Mapping approach to promote implementation of veterinary guidelines



Step	Activity
1. Systematic development of implementation intervention	I) Design performance indicators
	II) Explore barriers & drivers for implementation
	III) Selection of theory-based Behavior Change Techniques (BCTs)
	IV) Development of a Monitoring & Evaluation Plan
2. Implementation Intervention	Stepped Wedge design Field Trial using BCTs. Using peer consultation meetings, E-learning and others
3. Evaluation	RE-AIM framework to evaluate effectiveness, sustainability etc.

Consortium of:

- Faculty of Veterinary Medicine
- Institute for Responsible Use of Medicines (IVM)
- Dept Behavioral and Health Sciences, Wageningen UR
- Royal Dutch Veterinary Association (KNMvD)
- University Medical Centre Utrecht



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