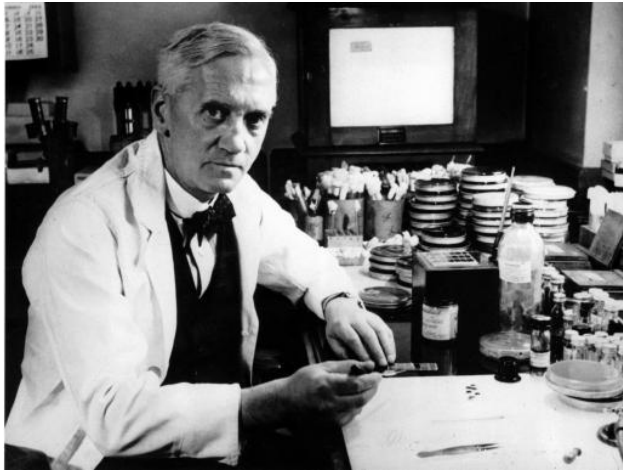


Danish experiences on how data surveillance and collection are used to reduce the use of antibiotics

Frank M. Aarestrup (fmaa@food.dtu.dk)



Actions that works



New antibiotics

Hygiene



Better health



Restrictions

Novel classes of antibiotics

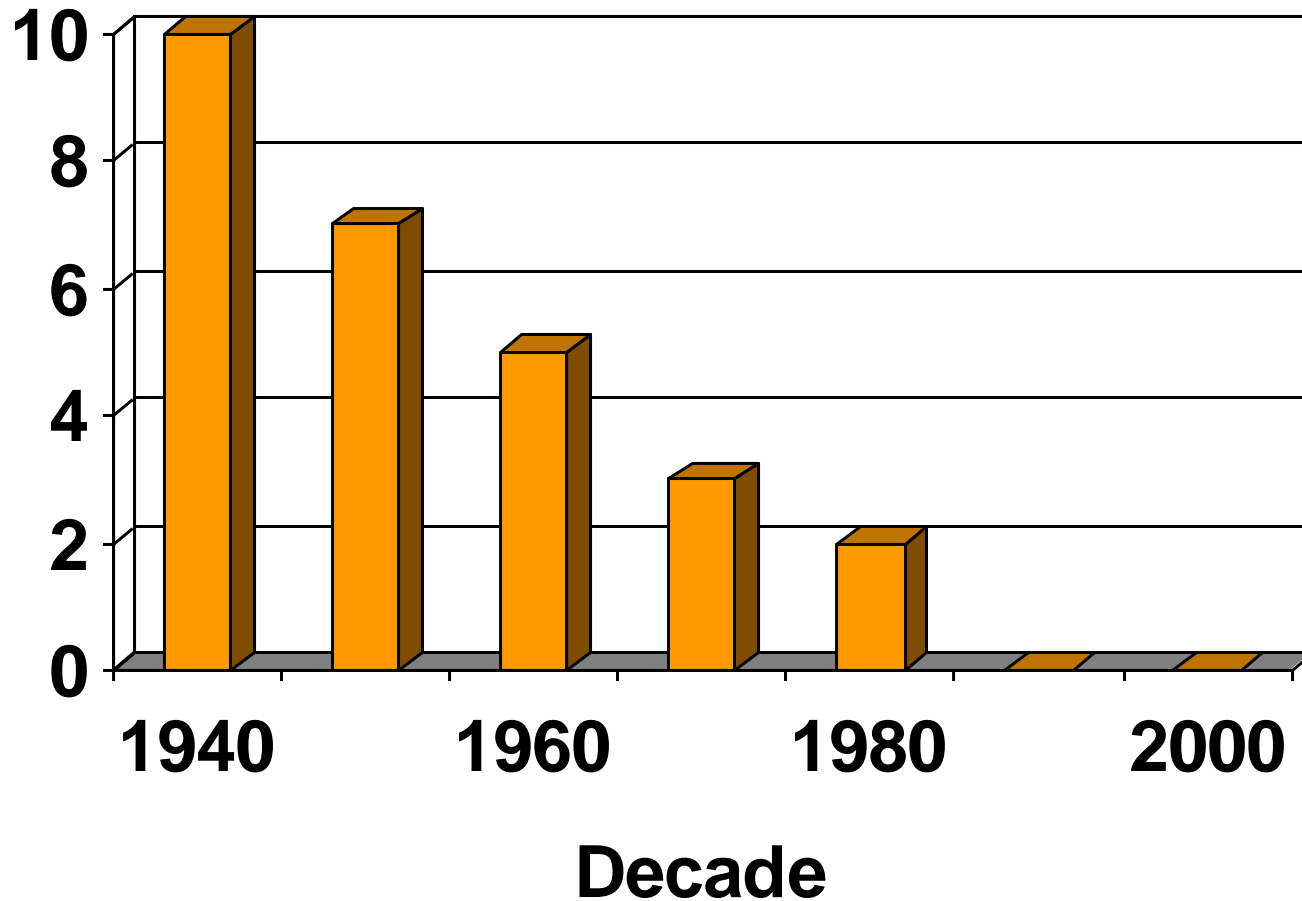
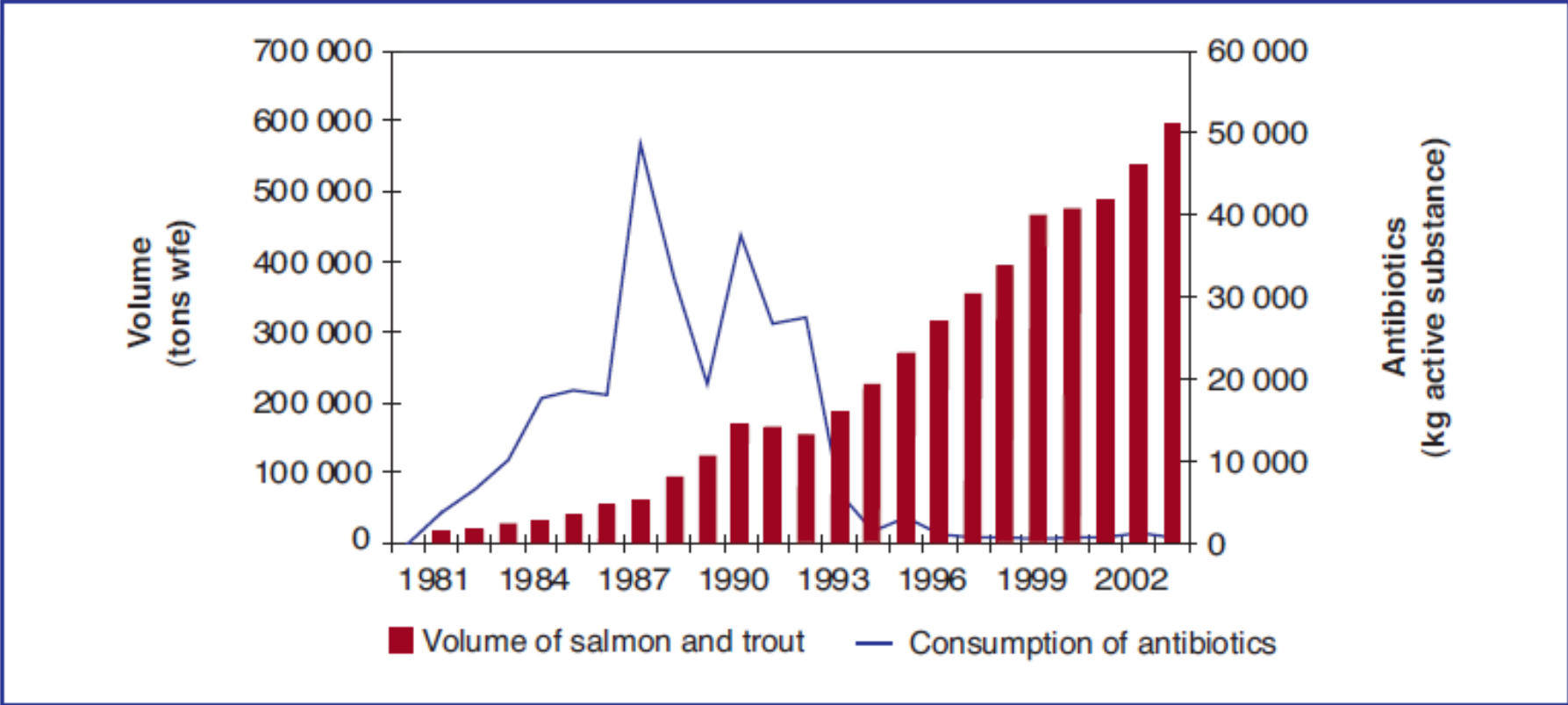


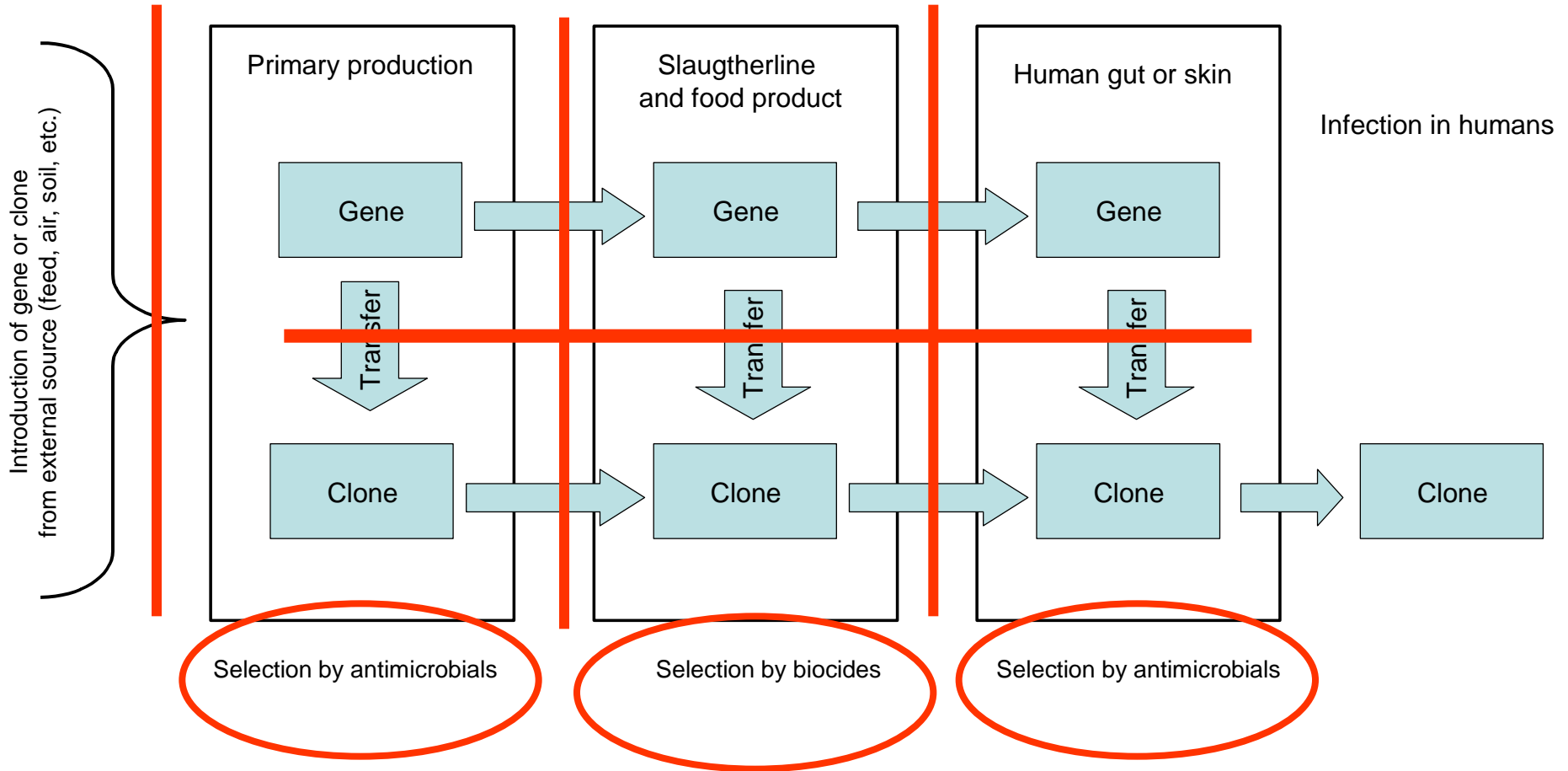
Figure 4.6 Reduction in antimicrobial use after the introduction of vaccination in aquaculture



Wfe: whole fish equivalent.

Source: Reproduced from ¹³³ with permission.

Possibilities for control



Stop selection = stop usage

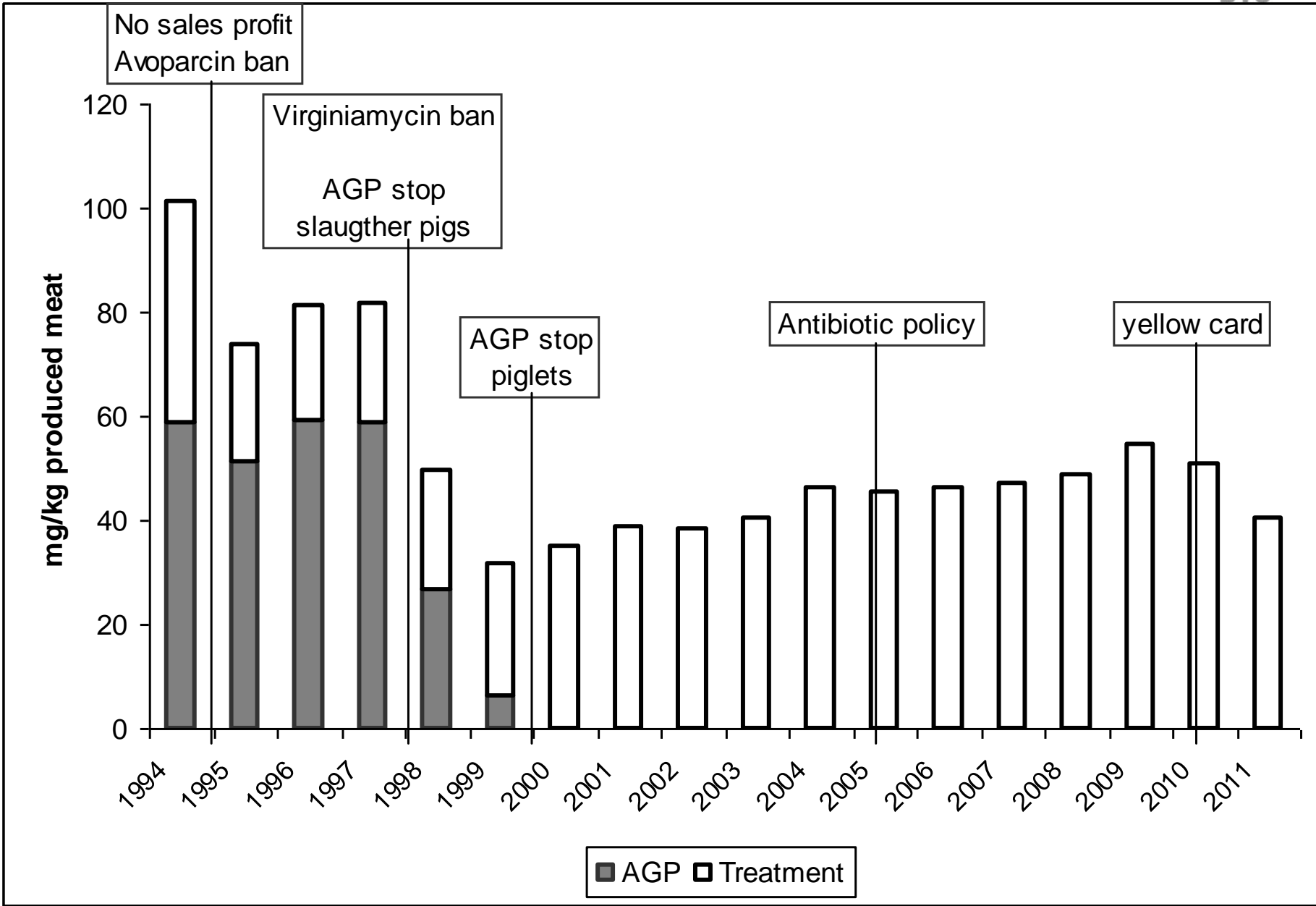
Stop transmission = hygiene

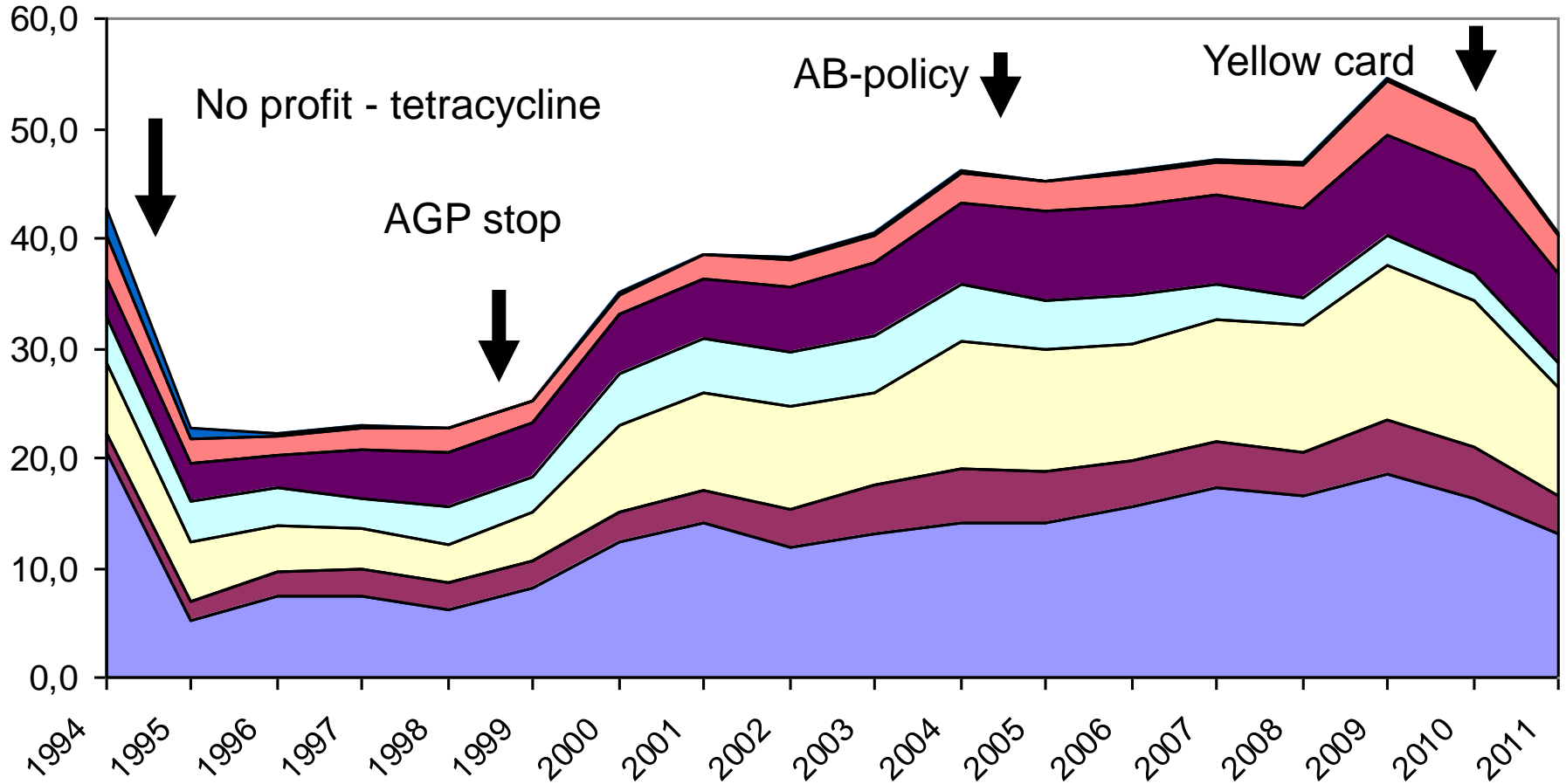
Control transmission

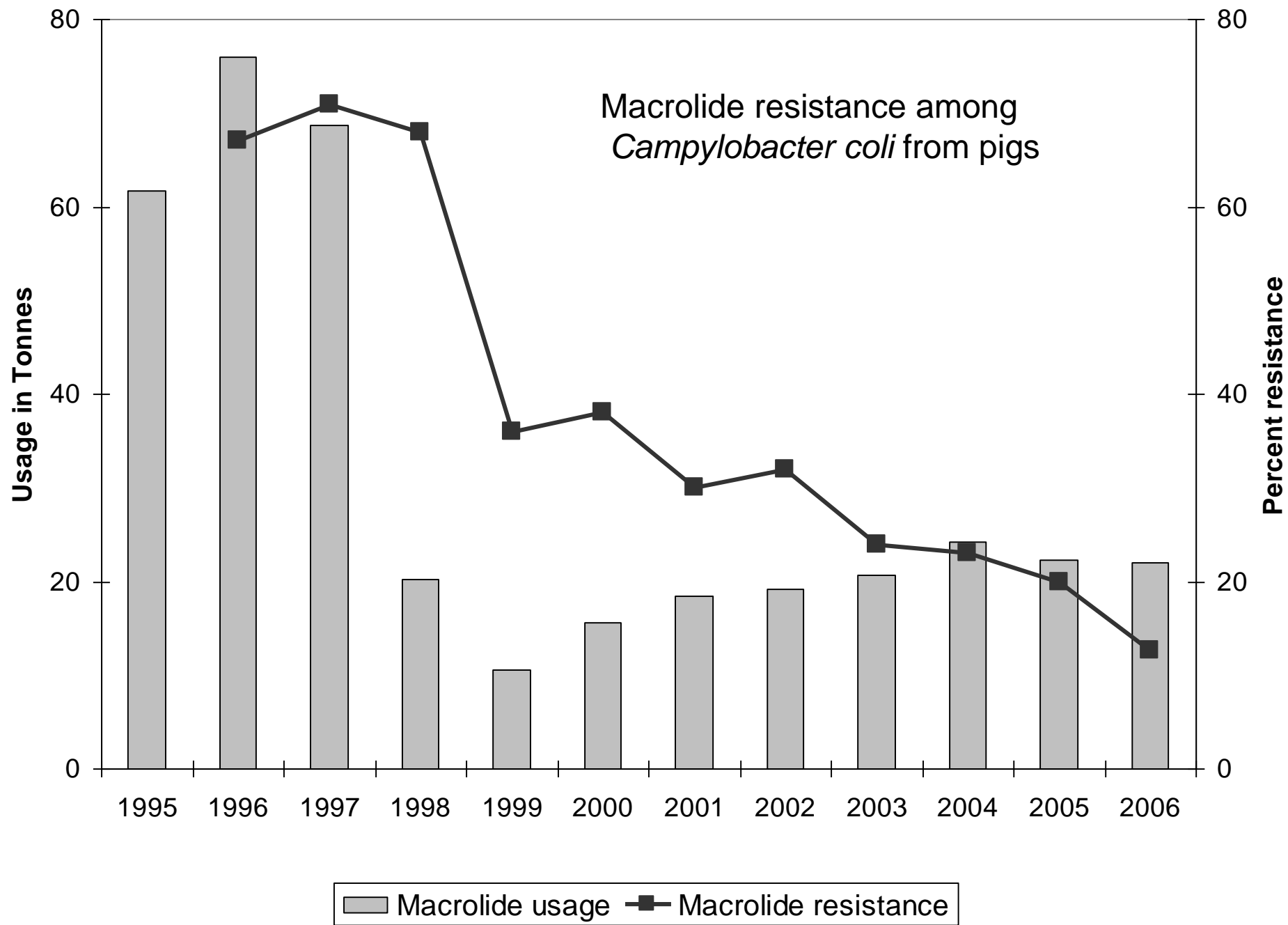
- Better hygiene
 - Been of value in numerous studies (known since ancient times)
- Stop for trade with live animals
 - Unknown effect
- Criteria for sales of meat
 - Unknown effect

Reducing consumption

- Prescription – non-prescription
- Approval (extra-label use)
- Banning
- Prescriber behavior
- Restrictions on use of certain classes
- Limiting profit
- Price and taxation
- Preventive veterinary strategies







Targeted control Canberra and Copenhagen Expert Reports



World Health Organization



CRITICALLY IMPORTANT ANTIBACTERIAL
AGENTS FOR HUMAN MEDICINE
FOR RISK MANAGEMENT STRATEGIES OF
NON-HUMAN USE

Report of a WHO working group consultation

15 - 18 February 2005
Canberra, Australia

CONSULTATIONS AND WORKSHOPS

Critically Important Antimicrobials for Human Medicine:

Categorization for the Development
of Risk Management Strategies to
contain Antimicrobial Resistance due
to Non-Human Antimicrobial Use

Report of the Second WHO Expert Meeting
Copenhagen, 29-31 May 2007



World Health
Organization

DEPARTMENT OF FOOD SAFETY, ZOOSES AND FOODBORNE DISEASES

Most critical :




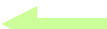


- Quinolones
- 3rd gen. cephalosporins
- Macrolides

http://www.who.int/foodborne_disease/resistance/FBD_CanberraAntibacterial_FEB2005.pdf


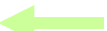
http://www.who.int/foodborne_disease/resistance/antimicrobials_human.pdf

Danish actions





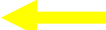


• Animals

- No profit (1995) 
- AGP ban (1995, 1998, 2000, 2006) 
- Restrictions on usage of FQ (2002) 
- Antibiotic policy (2005) 
- Voluntary ban on cephalosporins (2010) 
- Yellow card (2010) 

• Food

- DT104 zero-tolerance (1998) 
- Case-by-case evaluation of food (2006) 

• Humans

- EPI-NEWS
 - Increased occurrence of macrolide resistant *S. pneumococcus* 
 - Increased usage of broad spectrum antibiotics 
 - Increased usage of antibiotics in the community 
 - Increased usage of FQ 
 - Increased occurrence of MRSA 
 - Increased occurrence of ESBL 
- MRSA notifiable (2006) 

Positive effect

Perhaps effect

No effect

Surveillance is the basis for everything

- **Relative importance of pathogens**
 - Targeted interventions
- **Relative importance of sources**
 - Targeted interventions
- **Baseline**
 - Setting targets for control
- **Changes over time**
 - Effect of interventions
- **Detection of novel problems**
- **Further studies**

Conclusions

- **Actions that works**

- No profit
- Restrictions
- Control based on consumption

- **Future**

- Target the worst antimicrobials
- Prevent diseases
- **Always surveillance in combination with interventions!!**