

DANMAP

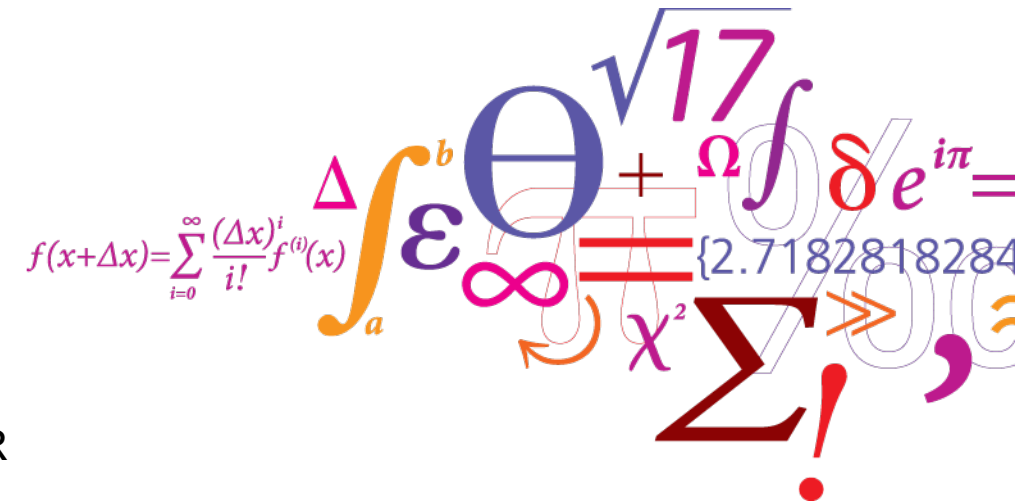
From action plans to actions

The importance of integrated surveillance

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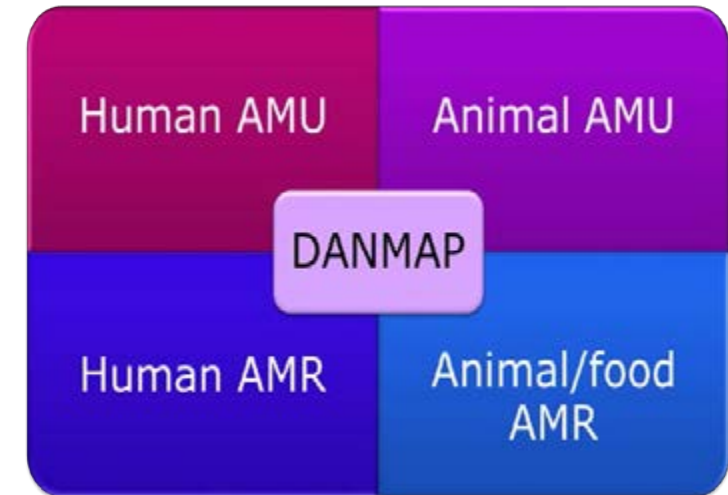
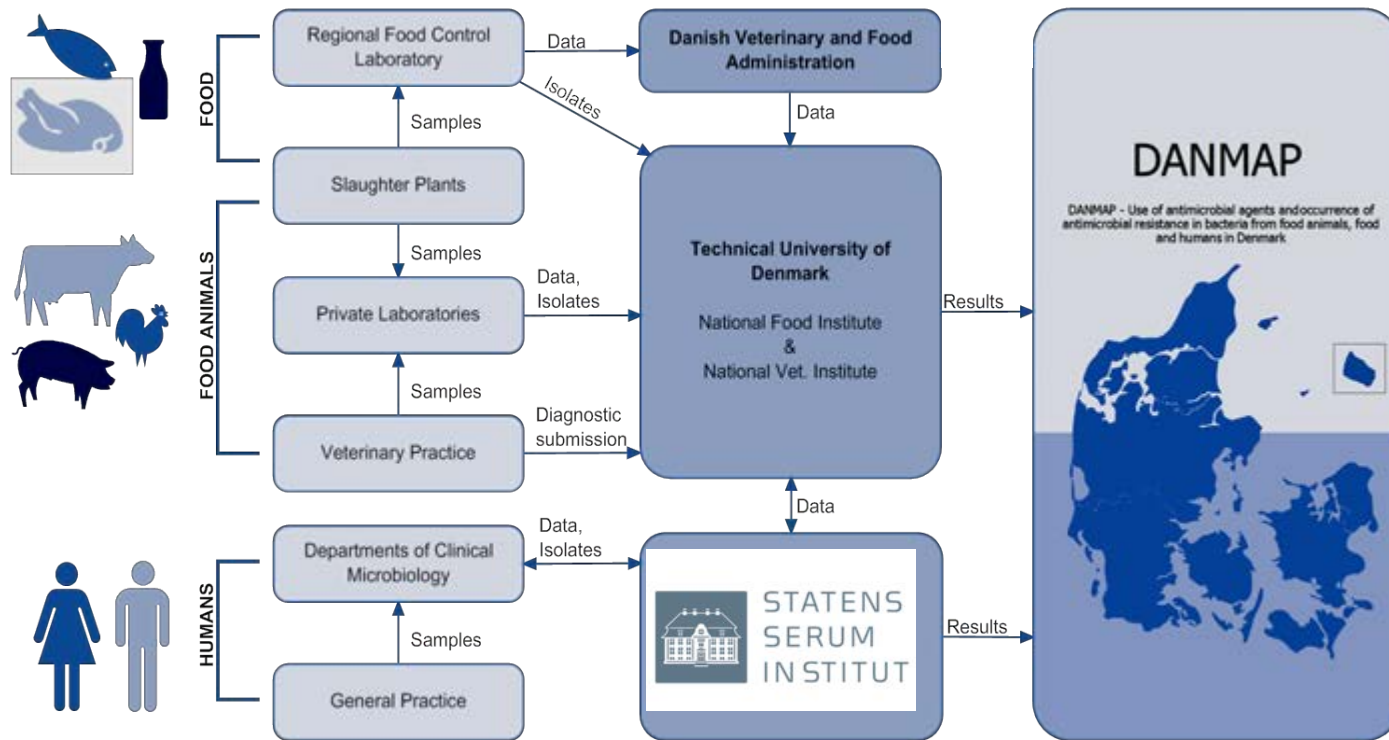
Regional Symposium on AMR
 Hong Kong, November 2018

DTU Food
 National Food Institute



DANMAP

- Integrated One Health Surveillance system 1995->

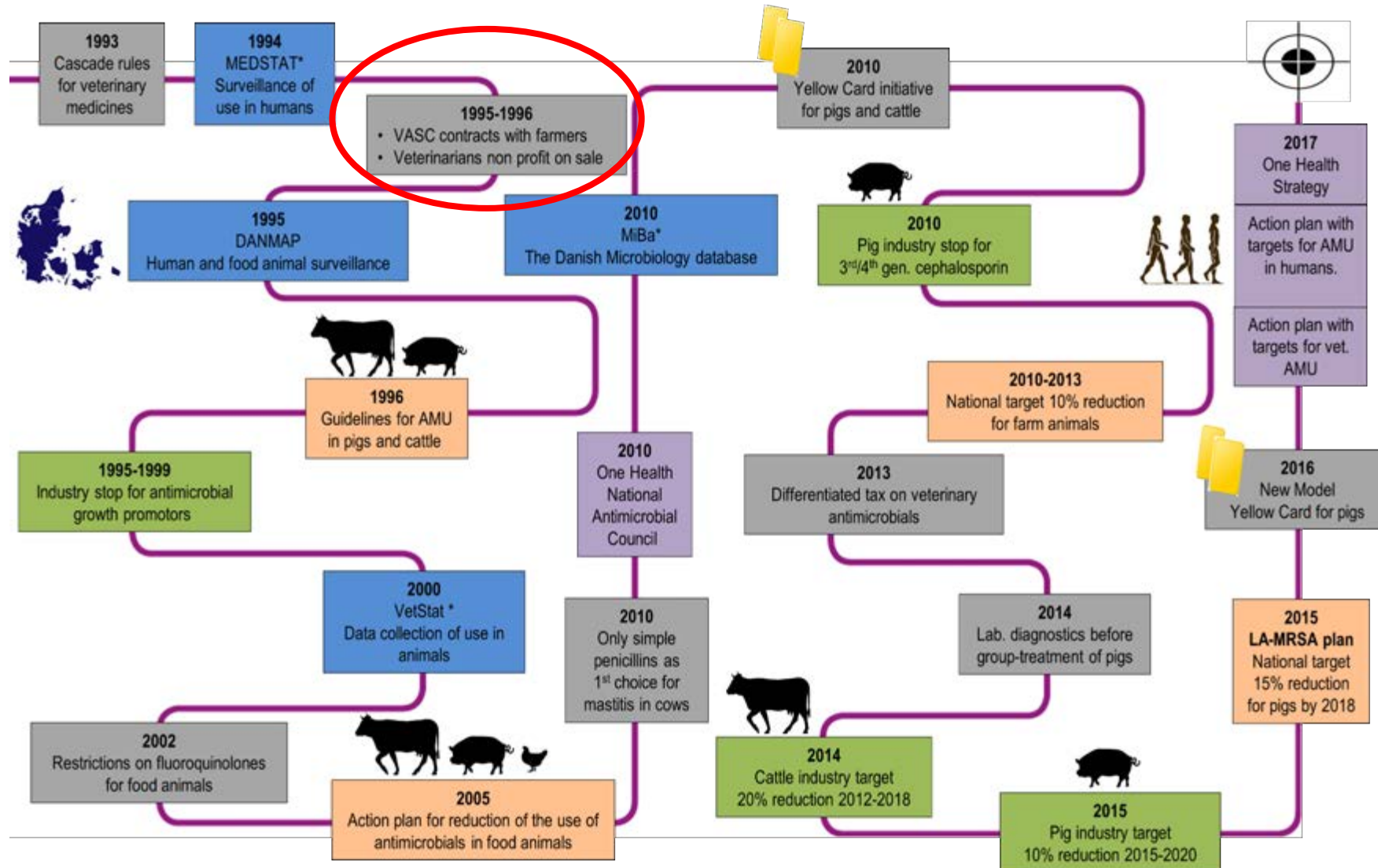


Understanding *The Danish way...*

- **Almost all healthcare is public**
- **Veterinarians are private sector**
- **All AM on prescription only**
 - Human – pharmacies and hospitals
 - Animals – pharmacies, surgery & feed
 - Electronic capture from pharmacies, hospitals and billing systems
- **Facilitates interpretation at level of**
 - Patient (age, geografi, diagnosis, life time use...)
 - Herd/flock (species, production form, age, geografi, time...)
 - MD/DVM- level
- **Agricultural country**
 - 5* as many pigs as people
 - Pigs use 75% of antimicrobials in animals
 - Livestock industries are highly organised- Strong industry bodies



The long journey: >23 yrs of actions against AMR



Non-profit sales of AB

- Removed financial incentives for prescribing antibiotics
- No one was allowed to earn money on selling antibiotics
- Later – only licenced pharmacies sell AM

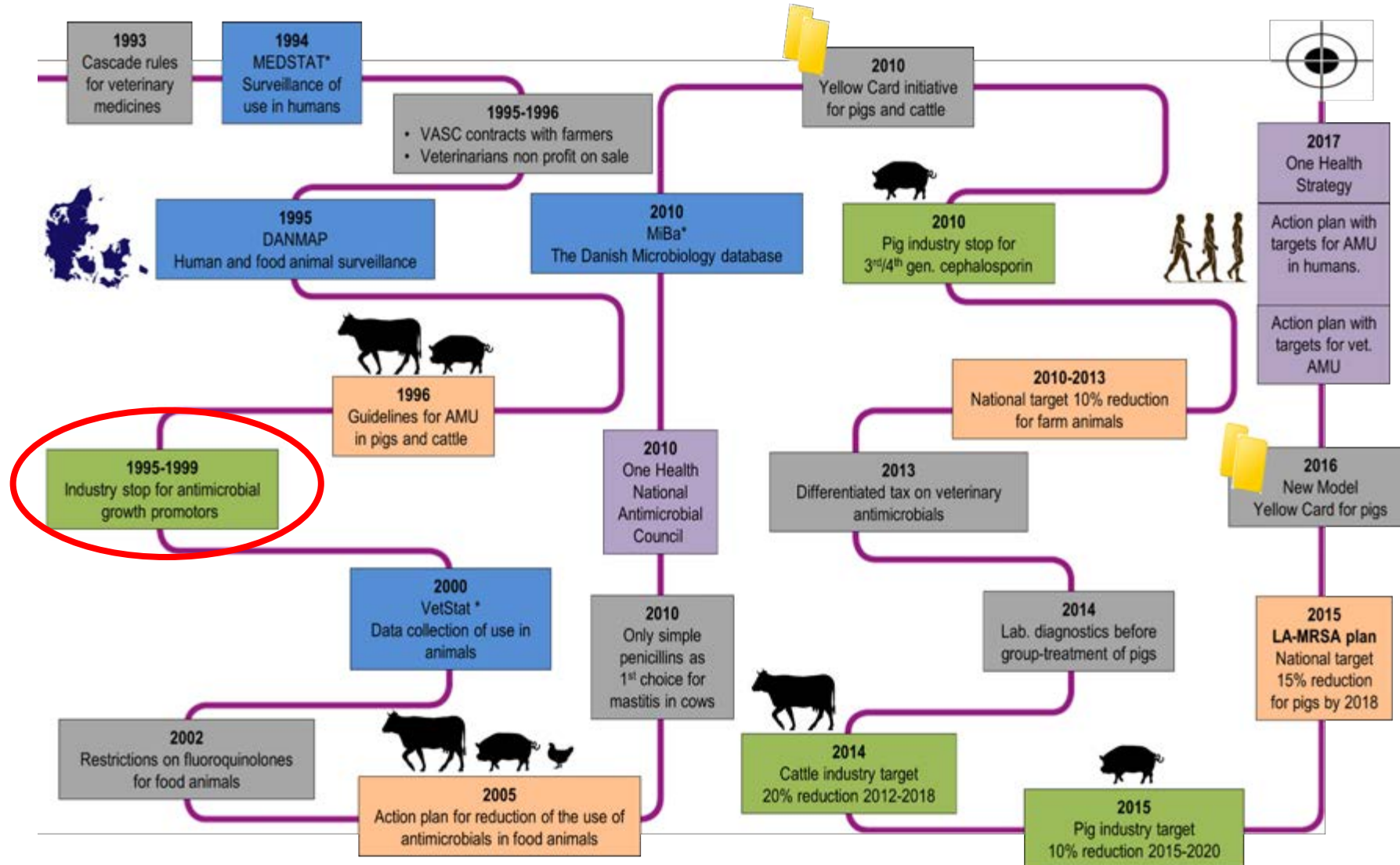


Changed role of veterinarian

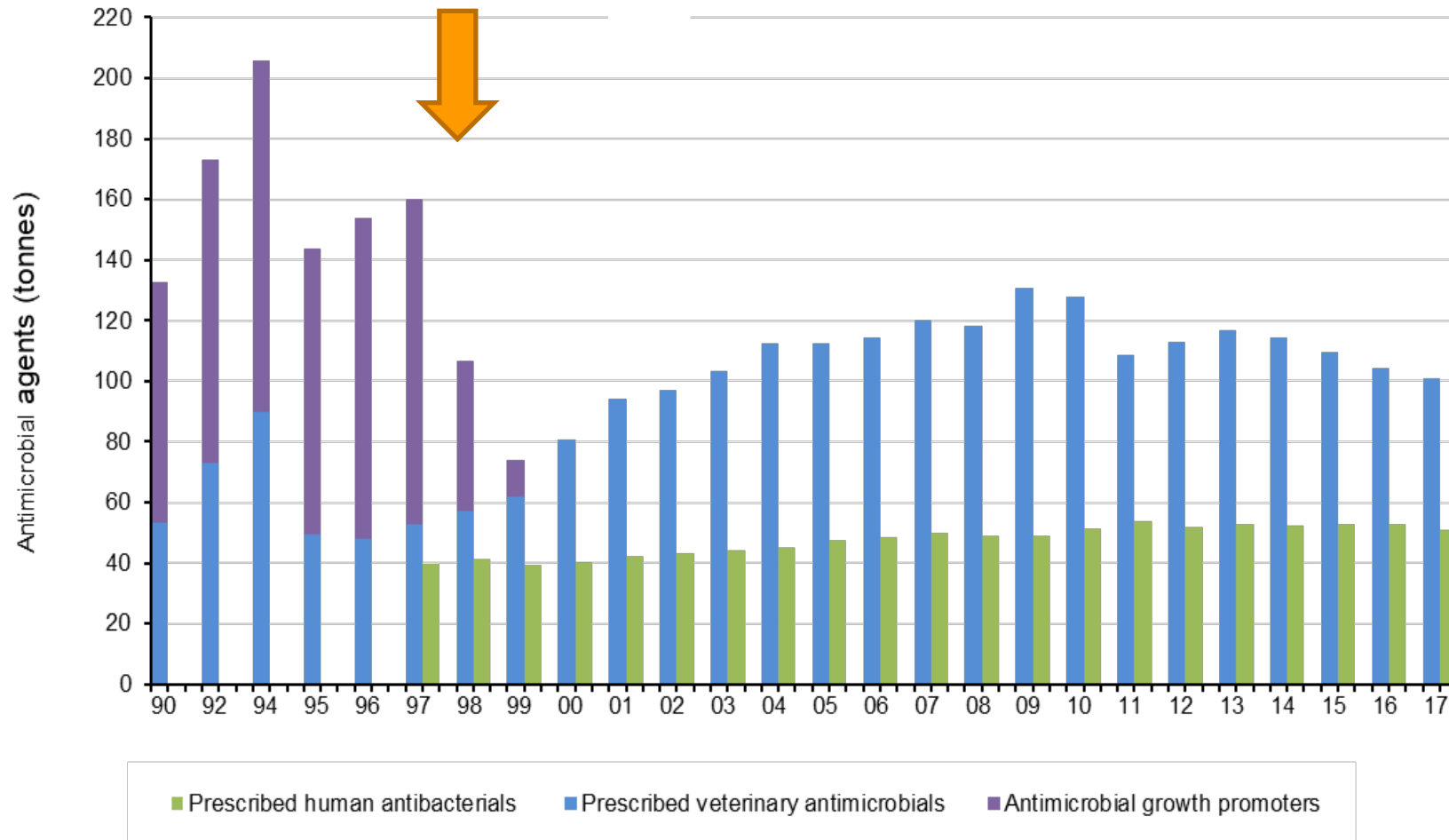
- Legislation:
 - Intensive production farms with contracted veterinary herd health advisor
 - More lenient AMU
 - Improve husbandry & biosecurity, prevent disease
- Herd contract + agreed number of visits per year
- 2010 mandatory for pig, cattle and mink farms



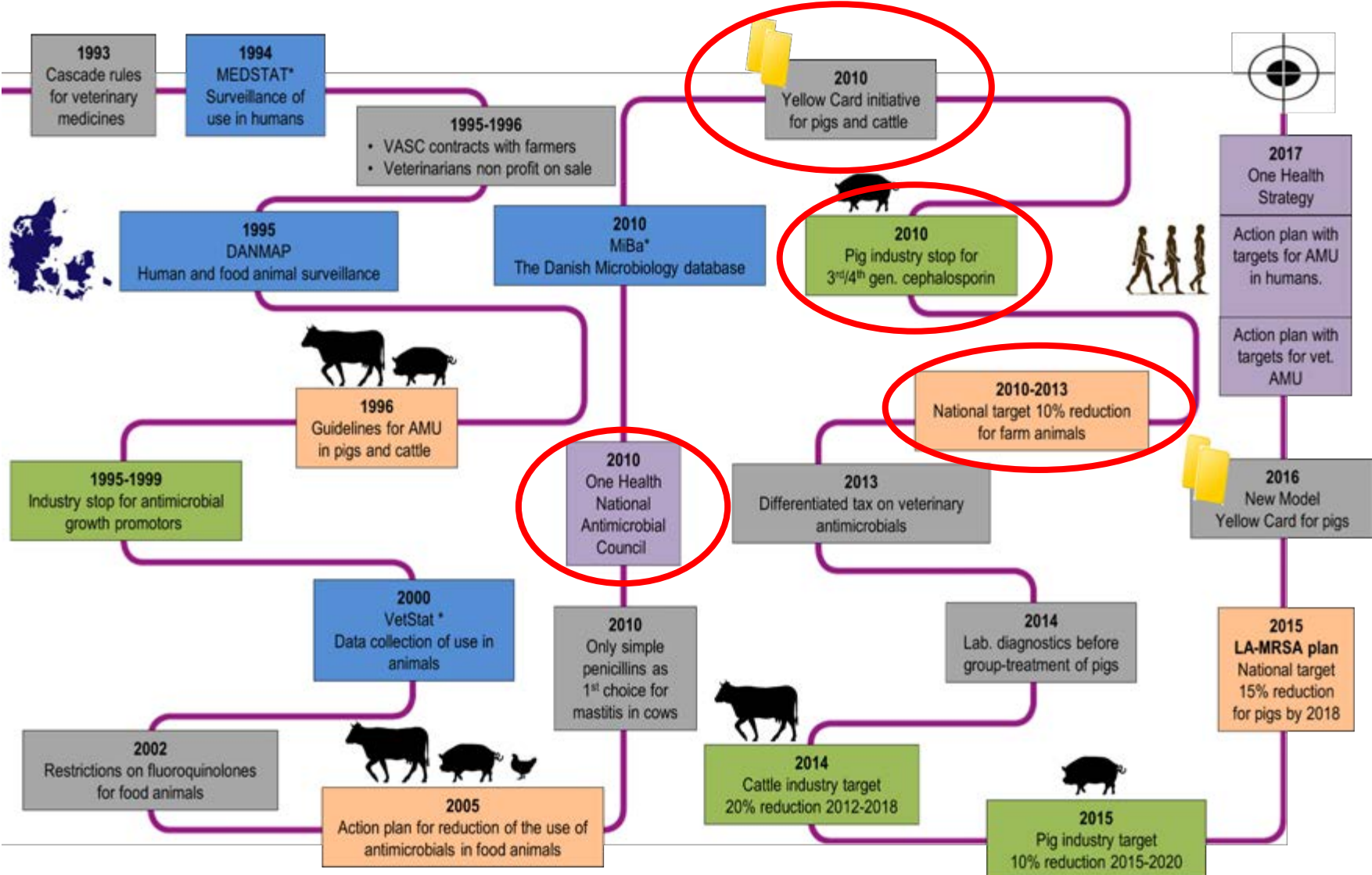
Action plans in the 90'es



Antimicrobials used in animals and humans in Denmark 1994-2017

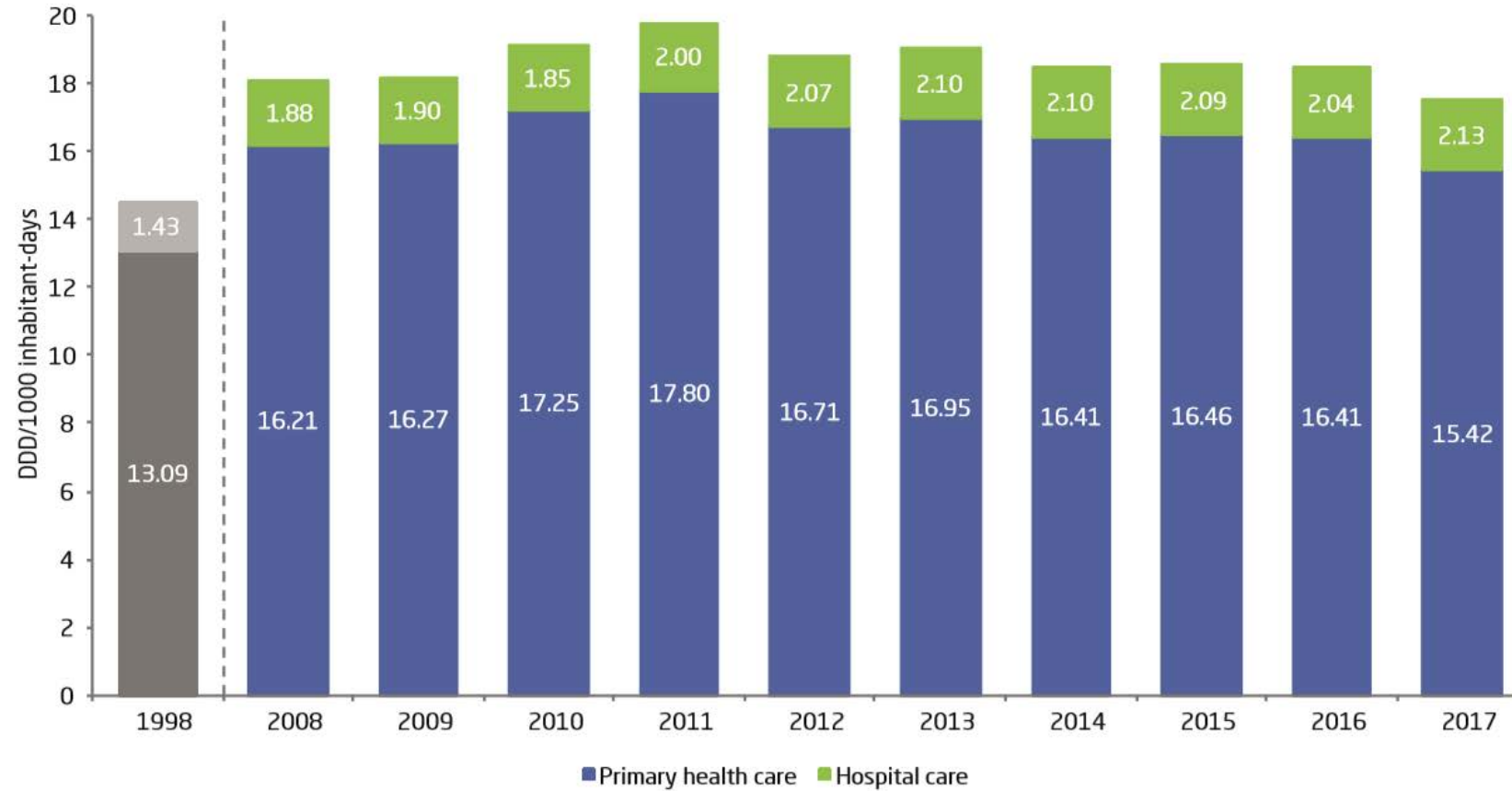


Action plan ~2010

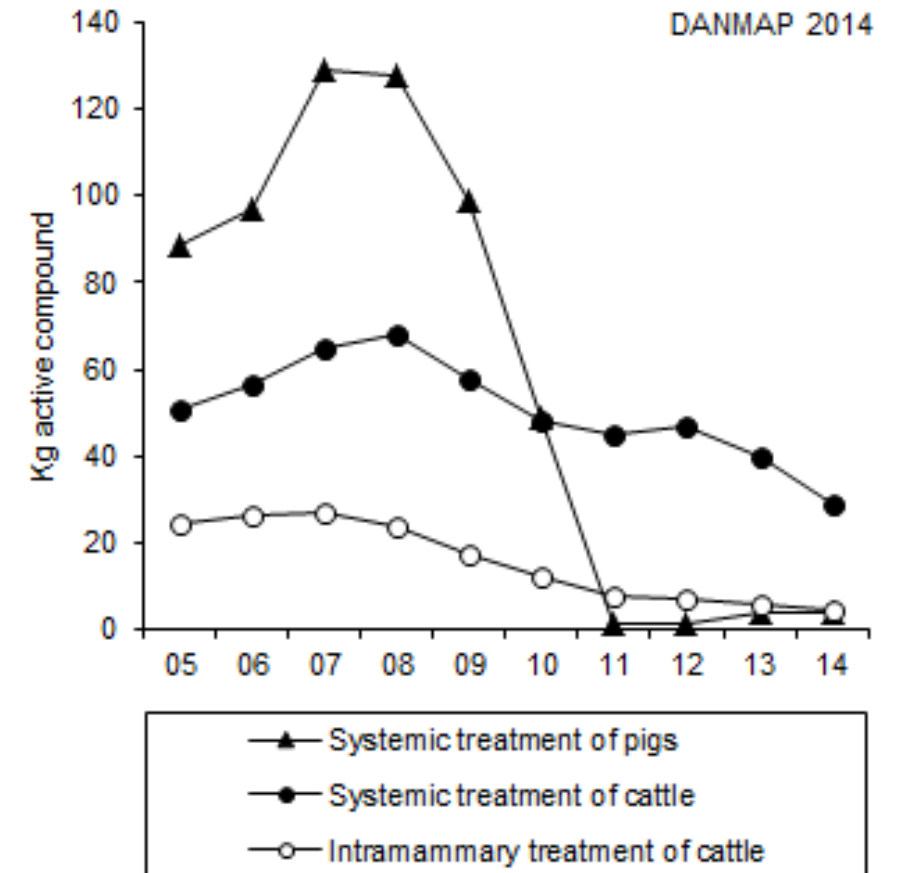
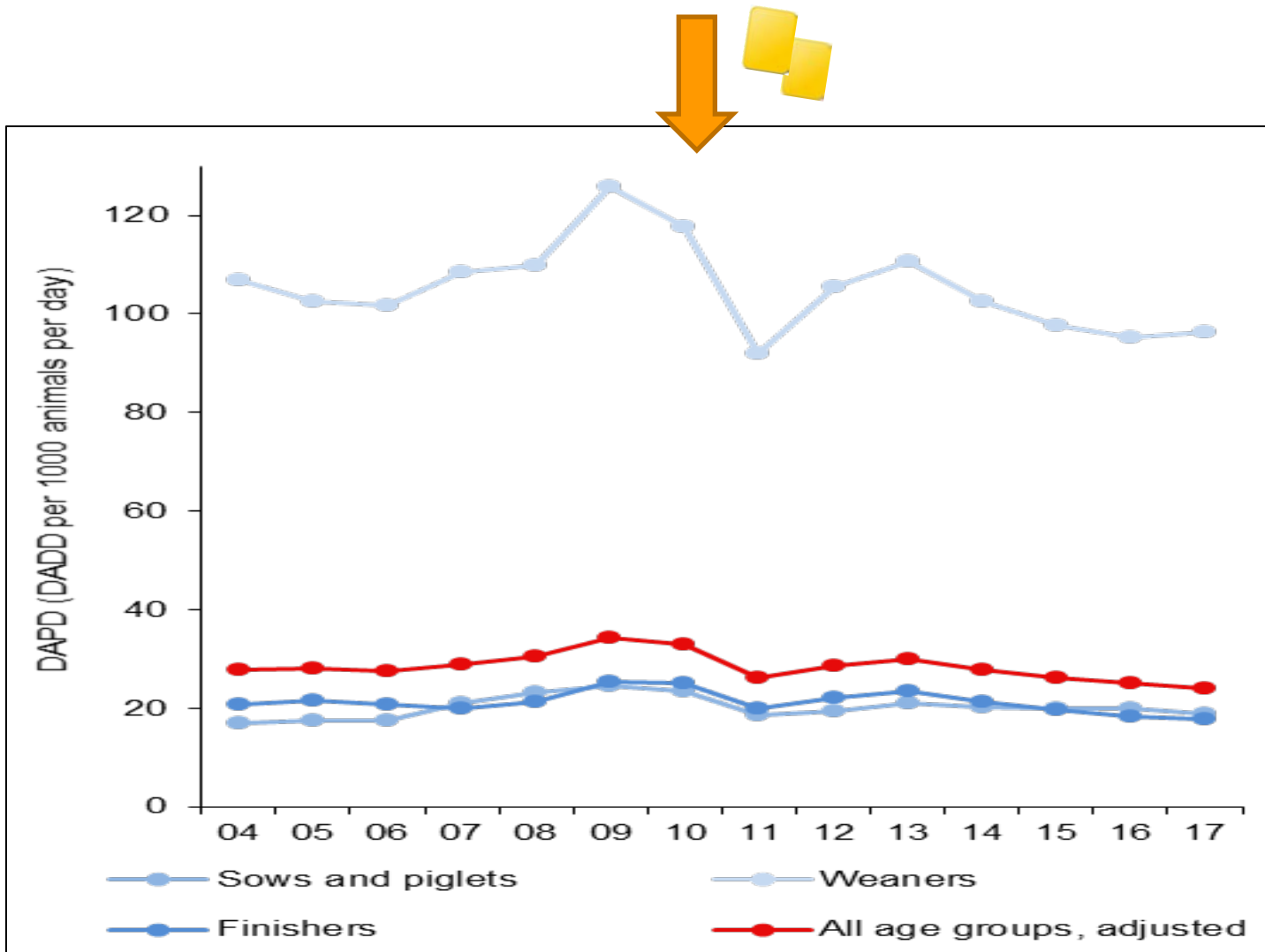


Total antimicrobial use in humans 2008-2017

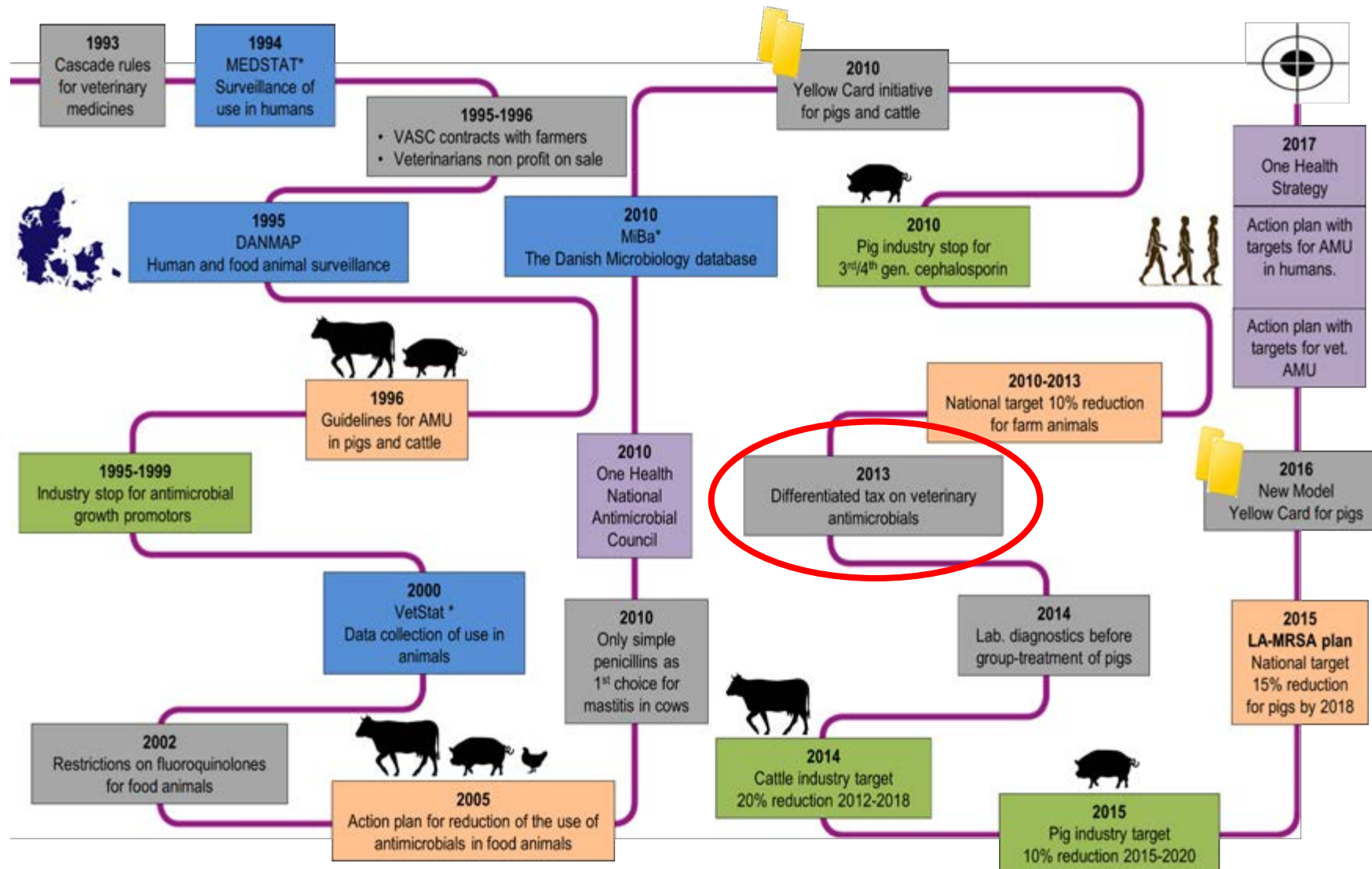
Figure 5.1 Total consumption of systemic antimicrobial agents in humans in primary health care vs. hospital care, (DDD), Denmark
DANMAP 2017



3rd & 4th gen. Cephalosporins
 - Voluntary ban in pigs in 2010



Action plan 2013



Differentiated tax/VAT on veterinary products

• Vaccines	No tax/VAT
• Narrow spectrum Penicillins	0.8 %
• Other veterinary antimicrobials	5.5 %
• Critically important antimicrobials	10.8 %
• Other veterinary medicines	0.8 %

Other control initiatives

- **Antibiotic treatment guidelines (1996->)**
 - Pigs, Cattle, Pets
 - Humans
 - Regularly updated
 - Based on risk assessments
 - AMR in public health

- **Public awareness of AMR**
 - Publish report every year
 - DANMAP seminar
 - Press releases
 - National tv, national newspapers, radio etc.
 - Experts argue in press



Effect of interventions - ERY^{Res}

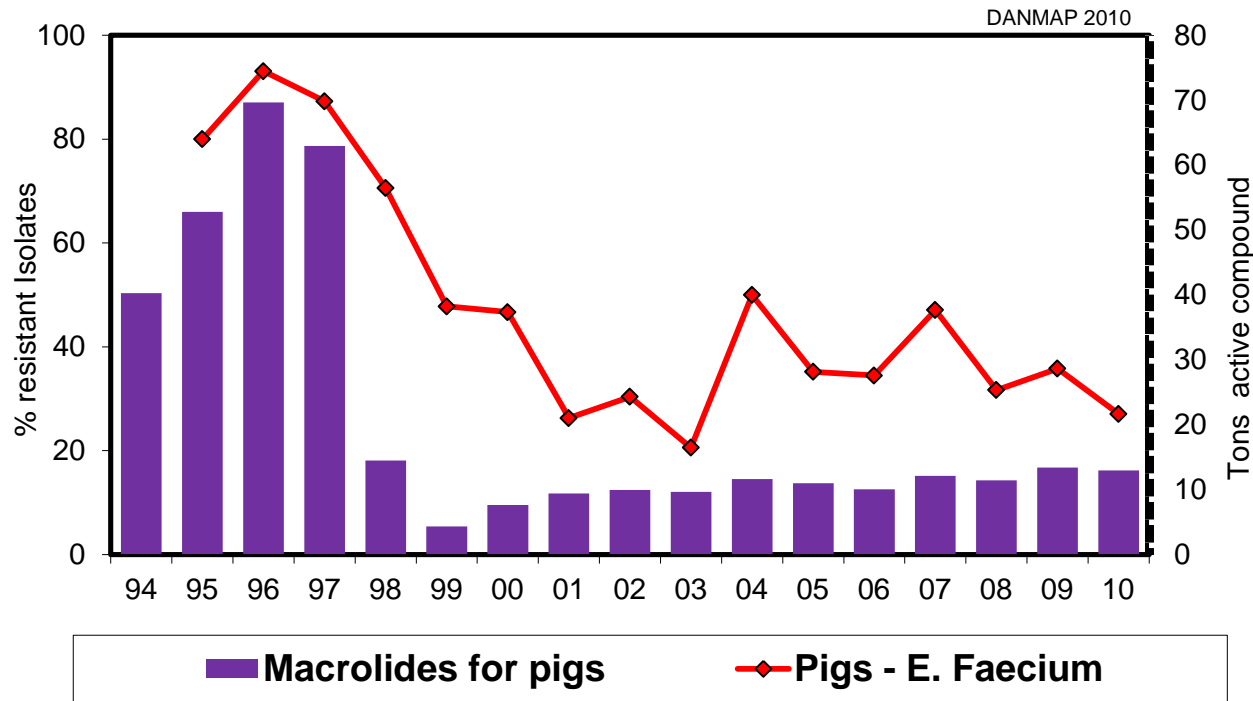
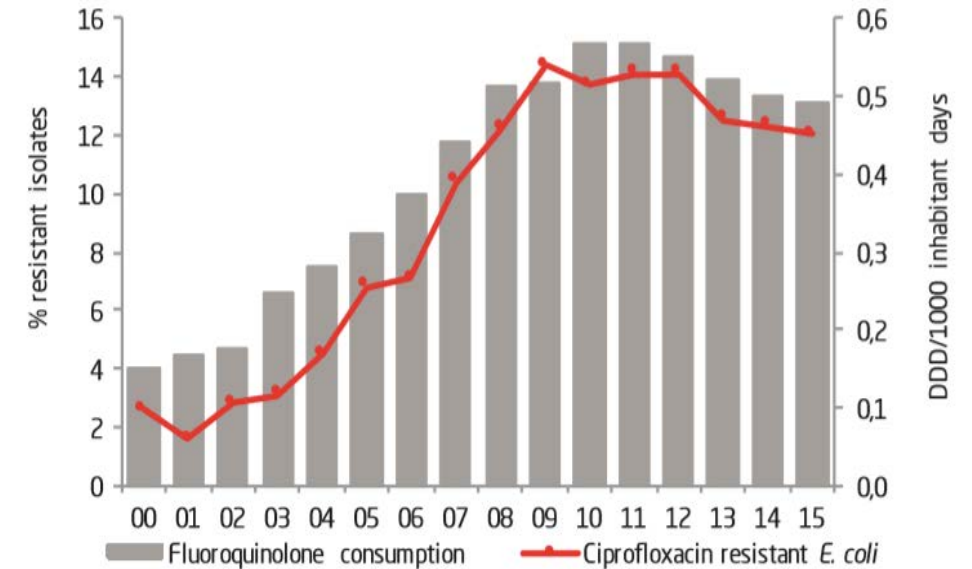
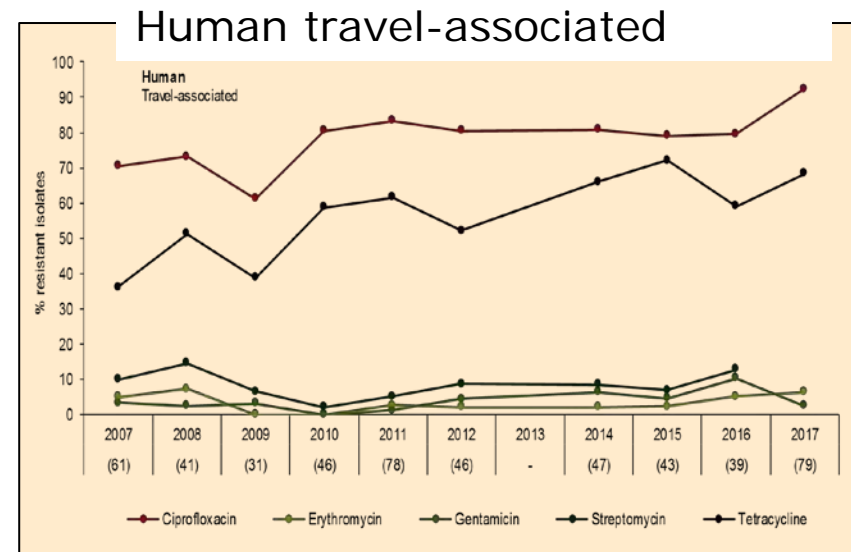
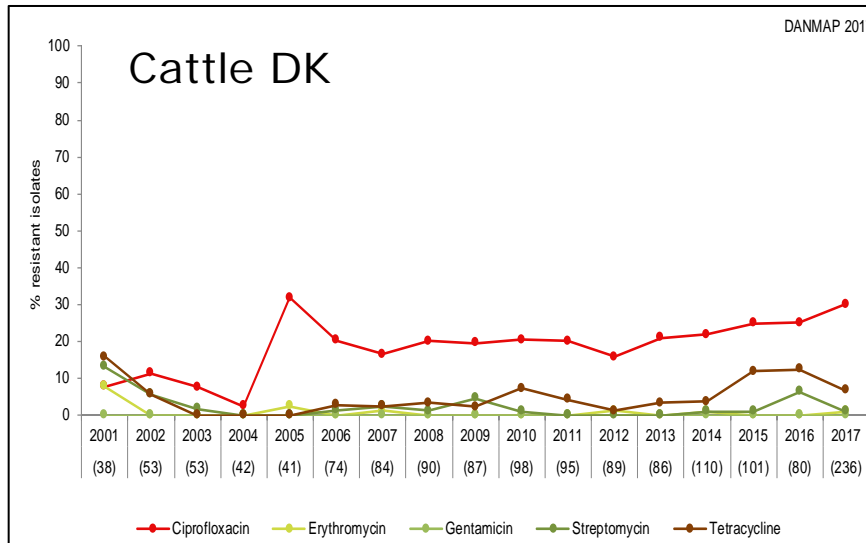
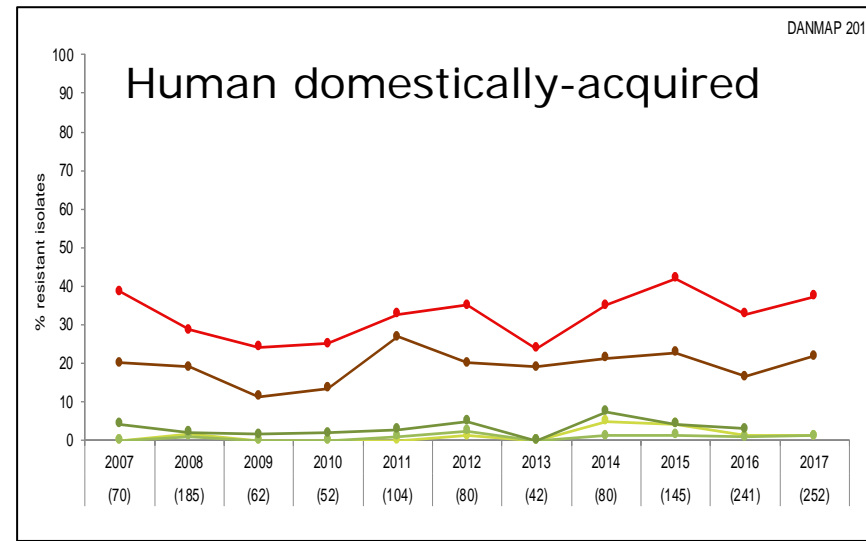
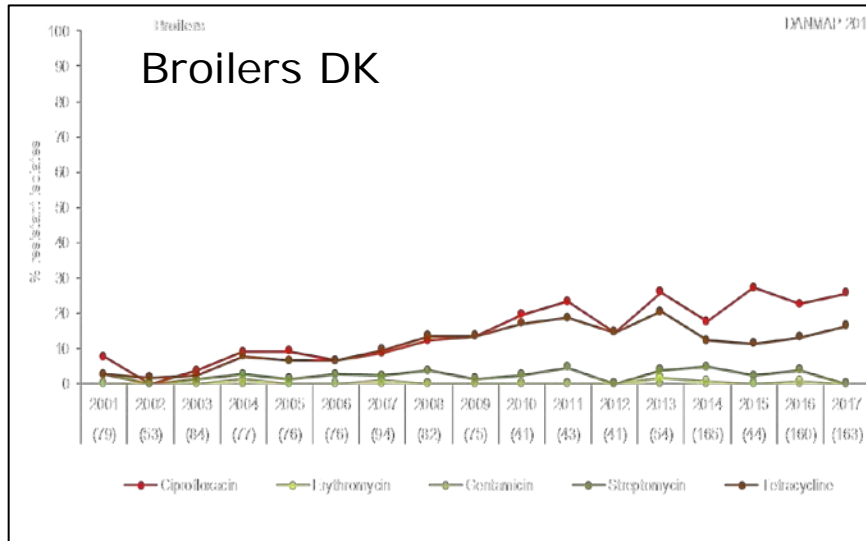


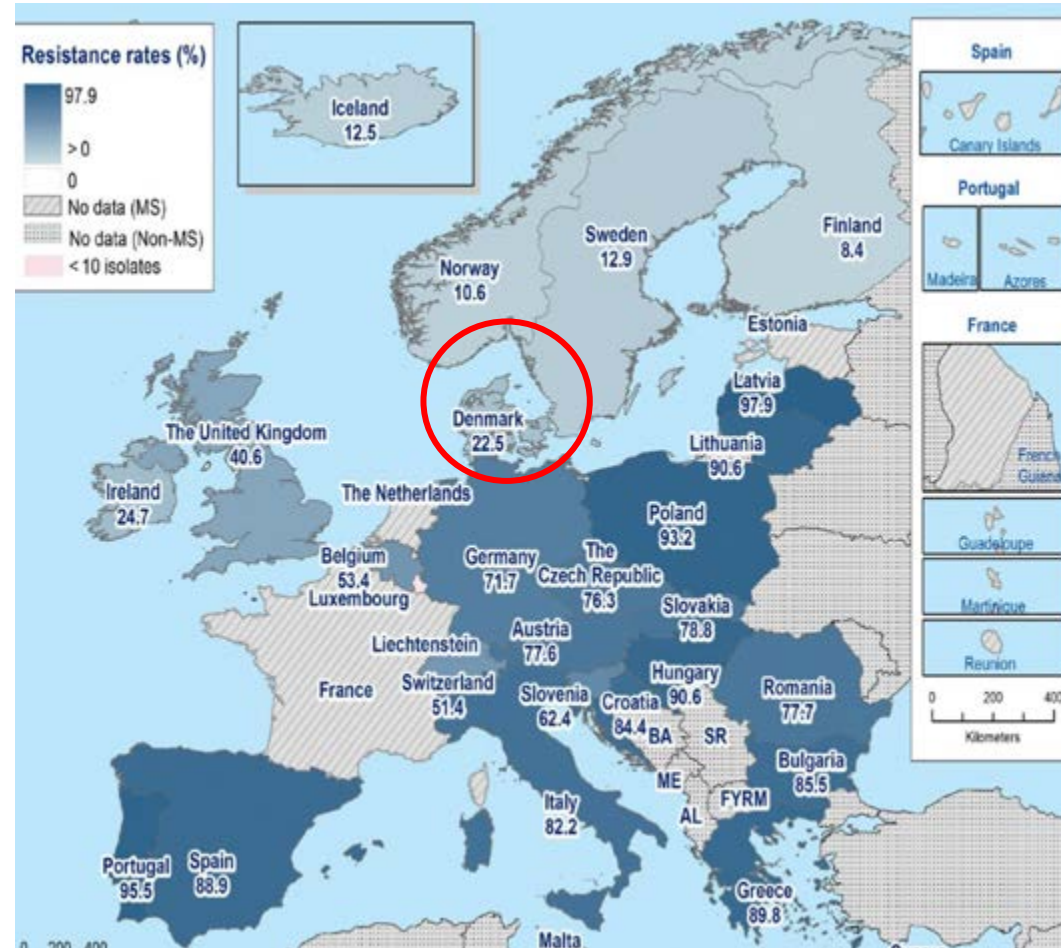
Figure 2. Resistance (%) in *Escherichia coli* from urine samples and fluoroquinolone consumption, data from primary health care, Denmark



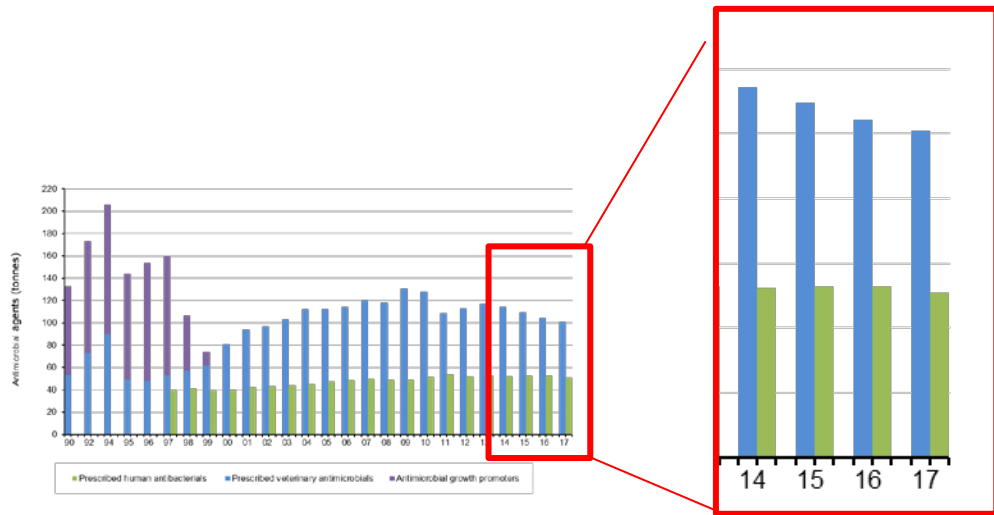
Campylobacter – AMR trends



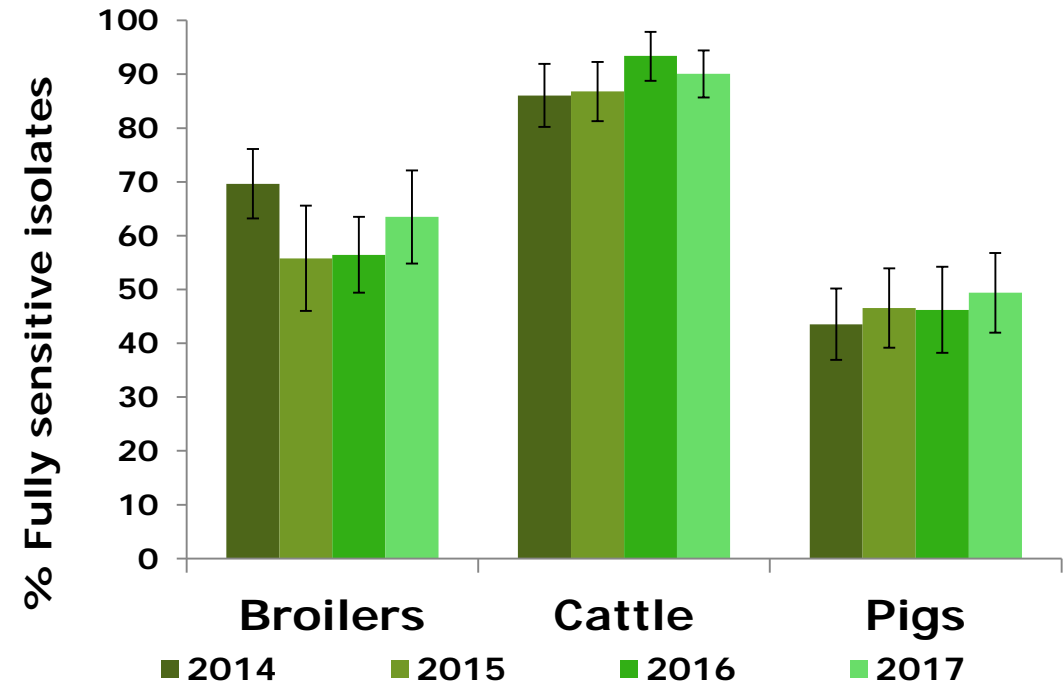
Ciprofloxacin resistance in Campylobacter in chicken



Trends in fully sensitive indicator *E. coli*



EU panel:
14 Antimicrobials



Lessons learned from 23 years of integrated surveillance of AMR and AMU

- Control of AMU is a long journey
 - Continues in DK
 - 2017 – new action plans**
 - Public health
 - Animals
 - One Health strategy
- Partnership and trust are needed
- No silver bullet – stepwise approach
- Public awareness is a political driver
- Surveillance is needed to control of AMR
 - Good surveillance of AMU is a great motivator
- Reducing AMU does not necessarily remove AMR
 - Paramount to stop development and emergence of AMR before it is too late

Acknowledgements



www.DANMAP.org

DANMAP 2017

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The screenshot shows the DANMAP website homepage. At the top, there is a navigation bar with 'Contact' and 'Sitemap' links, a search box, and logos for DANMAP, STANSENS SERUM INSTITUT, DTU Vet (National Veterinary Institute), and DTU Food (National Food Institute). Below the navigation bar is a main menu with 'About DANMAP', 'Downloads', 'Partners', 'EAAD', 'Contact', and 'Links'. The main content area features a large blue map of Denmark and the text: 'Welcome to the DANMAP website. DANMAP is the Danish Programme for surveillance of antimicrobial consumption and resistance in bacteria from animals, food and humans.' Below this, there are three featured sections: 'Download the new DANMAP report' (with a report cover image), 'EAAD' (European Antibiotic Awareness Day) with a date of '18 November' and a cartoon dog, and 'Contact' with a blue arrow graphic. A 'Shortcuts' sidebar on the right lists 'Downloads' and 'Press releases - Danish'. At the bottom, a footer reads 'DANMAP - the Danish Integrated Antimicrobial Resistance Monitoring and Research Programme'.