
DTU

DANMAP with highlights 2023

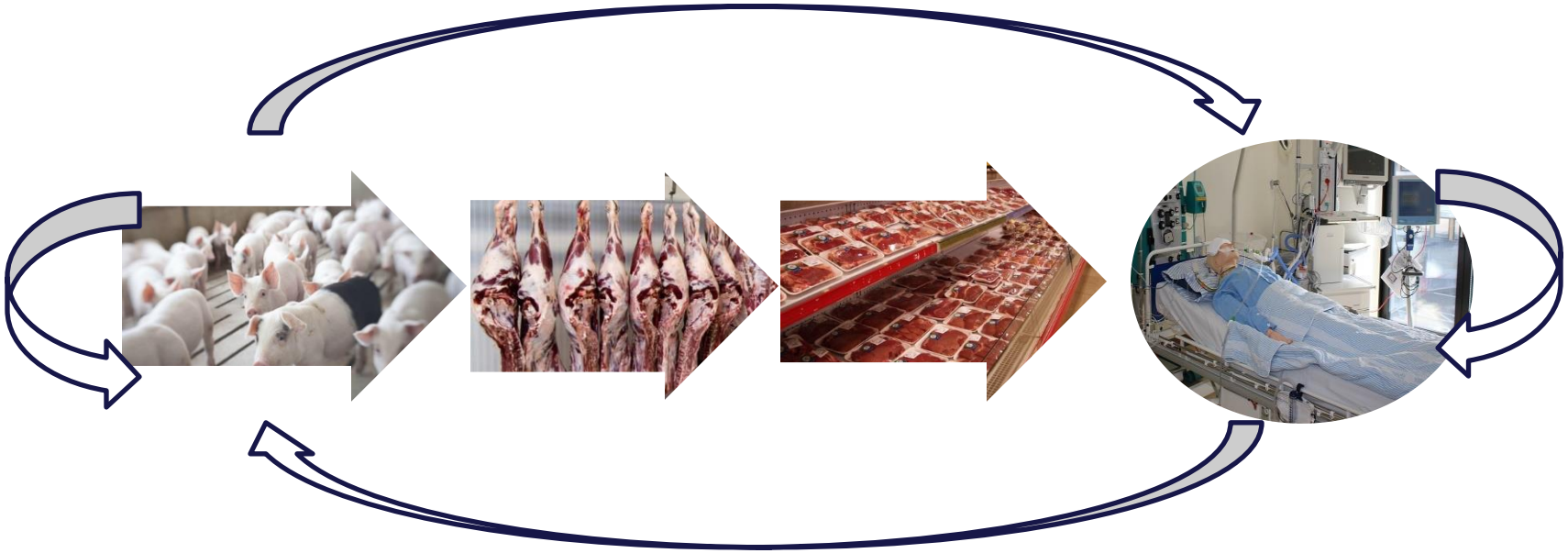
EFSA Advisory Forum meeting
4-5 December 2024 in Budapest
Dorte Lau Baggesen, DVM, ph.d.

Danish Integrated Antimicrobial Monitoring and Research Programme

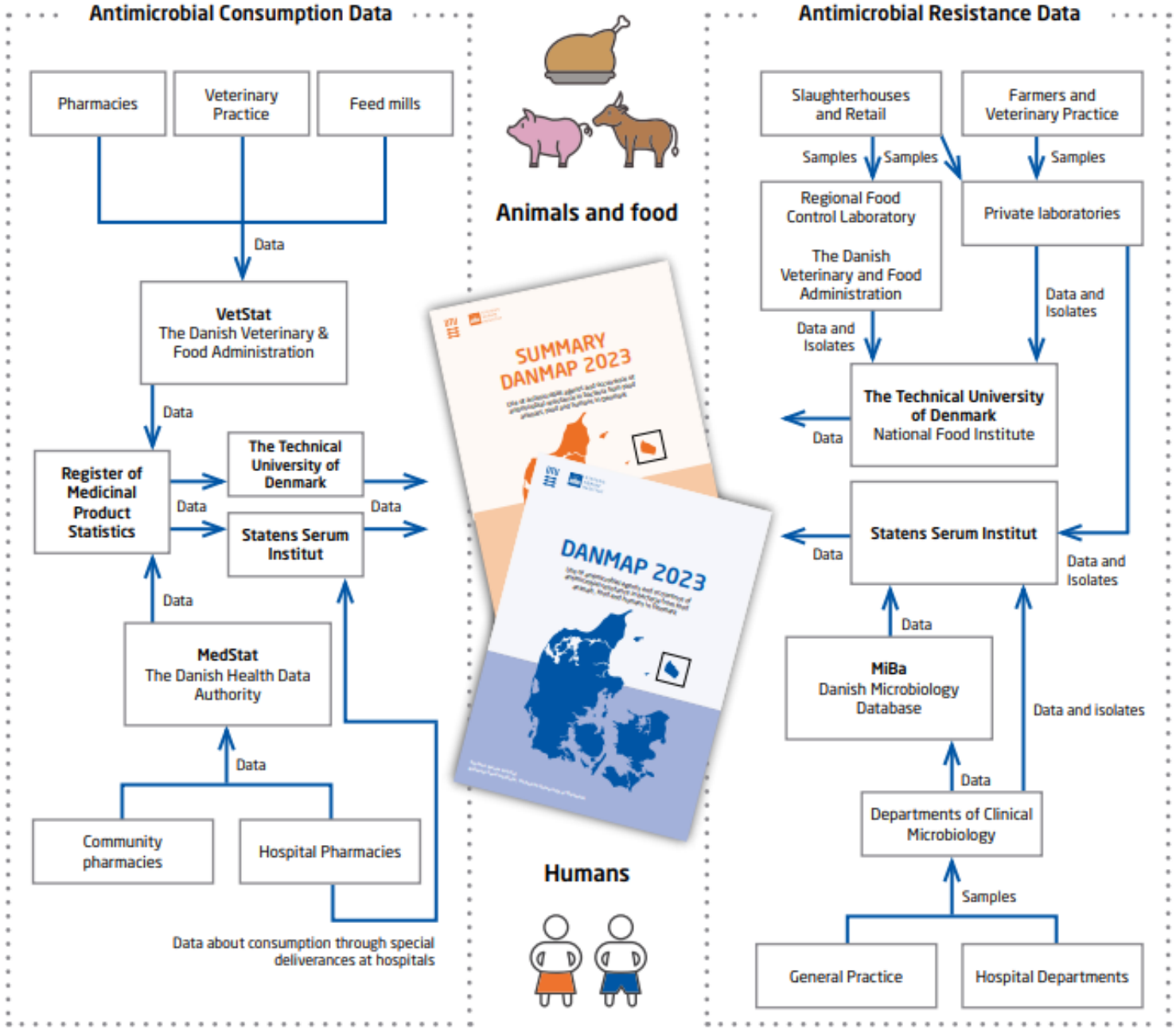
- **Established in 1995**
- **Collaborative project, coordinated by:**
  - National Food Institute
  - Statens Serum Institut (incl. DK-Vet)
- **Yearly reports since 1997**
- **Main deliverables AMR:** indicator and zoonotic bacteria from healthy food animals and meat, pathogenic bacteria from human clinical infections, pathogenic bacteria from animal clinical infections
- **Main deliverables AMU**: antimicrobial consumption in animals and humans (100% since 2002)

Aims of the DANMAP programme

- Monitor antimicrobial use (AMU) and antimicrobial resistance (AMR) in human and animal populations
- study the association between AMU and AMR within and across sectors
- identify routes of AMR transmission

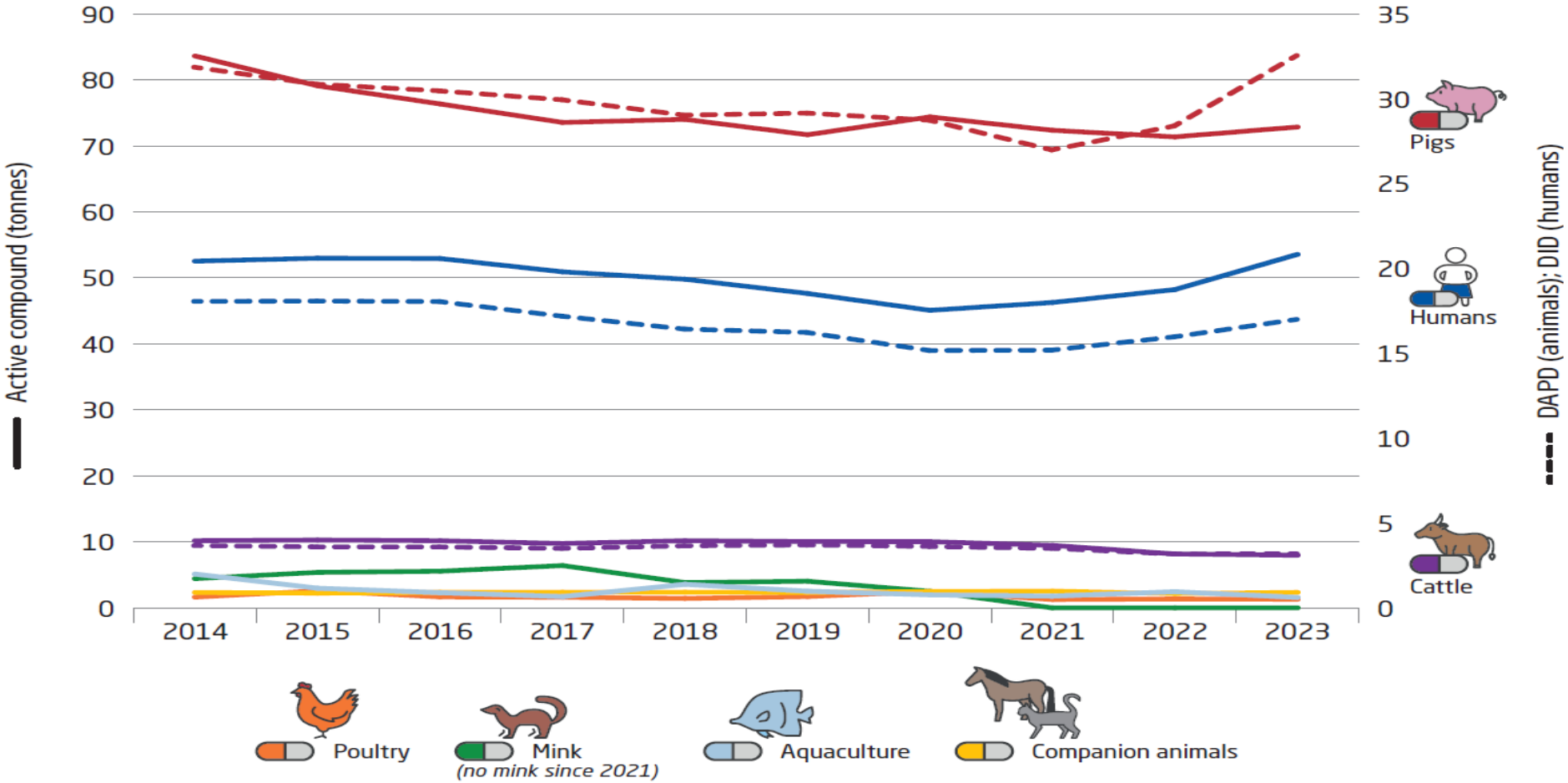


DANMAP data


Antimicrobial Consumption Data
Pharmacies
Veterinary Practice
Feed mills
Data
VetStat
The Danish Veterinary & Food Administration
Data
Register of Medicinal Product Statistics
Data
The Technical University of Denmark
Statens Serum Institut
Data
Data
MedStat
The Danish Health Data Authority
Data
Community pharmacies
Hospital Pharmacies
Data about consumption through special deliverances at hospitals
Animals and food
SUMMARY DANMAP 2023
DANMAP 2023
Humans
Antimicrobial Resistance Data
Slaughterhouses and Retail
Farmers and Veterinary Practice
Samples
Samples
Samples
Regional Food Control Laboratory
The Danish Veterinary and Food Administration
Private laboratories
Data and Isolates
Data and Isolates
The Technical University of Denmark
National Food Institute
Data
Statens Serum Institut
Data
Data and Isolates
Data
MiBa
Danish Microbiology Database
Data and isolates
Data
Departments of Clinical Microbiology
Samples
General Practice
Hospital Departments

Few results - 2023

Antimicrobial consumption in animals and humans, 2014-2023



Small amounts of kg active compound were used by unspecified animal species in 2023

Consumption of antimicrobials in pigs

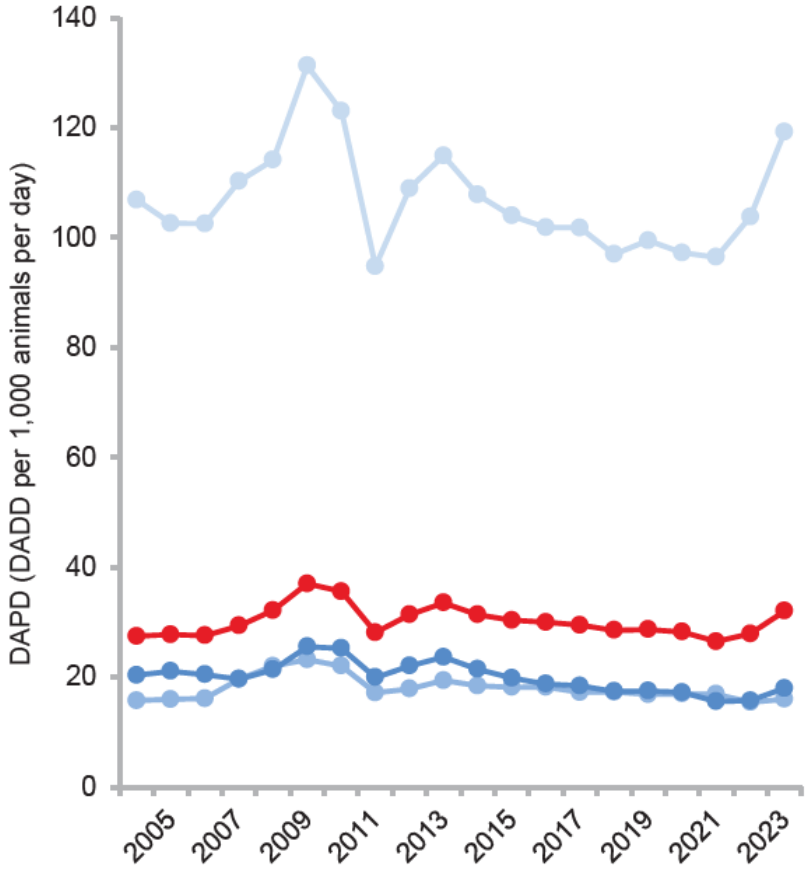
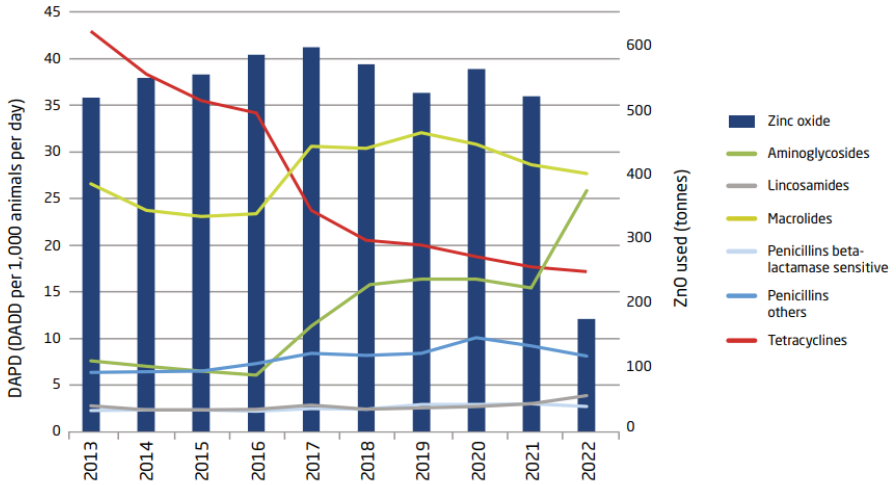
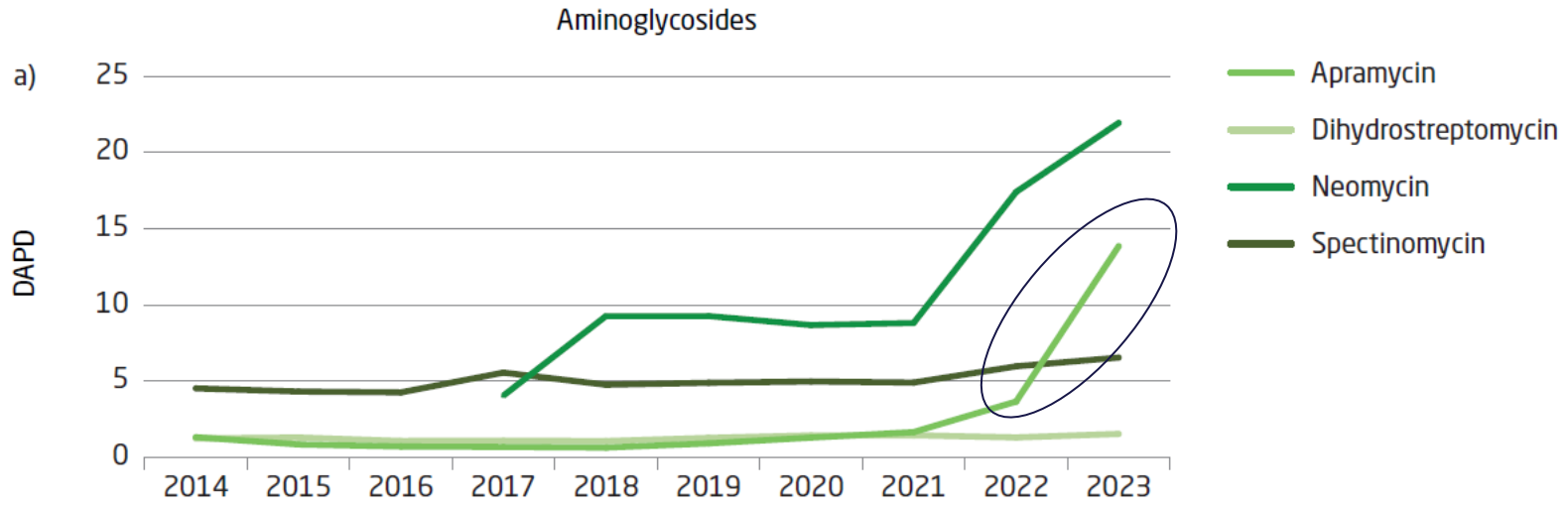


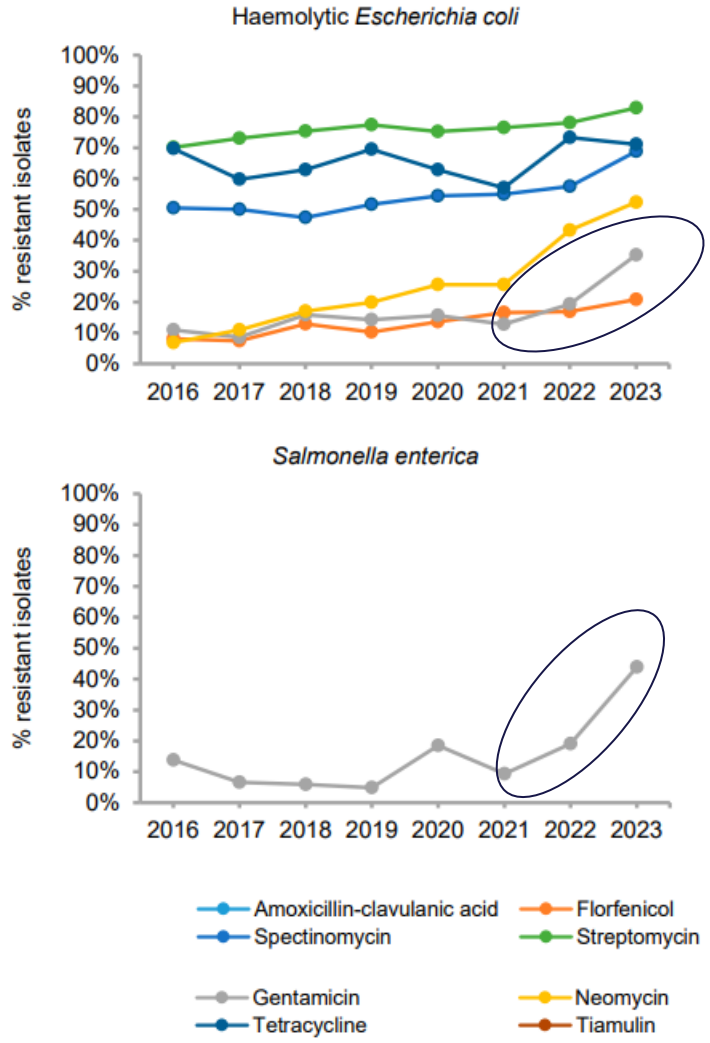
Figure 2.5 Antimicrobial (DAPD) and zinc oxide (kg) consumption in weaners, Denmark, 2013-2022



Cross resistance apramycin-gentamicin



Consumption of aminoglycosides in weaners

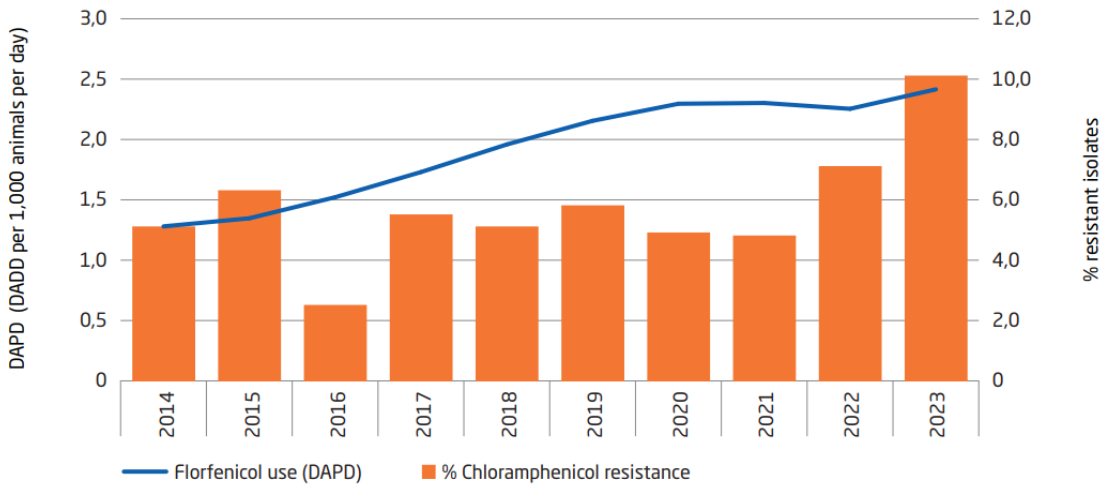


Resistance in clinical isolates from pigs

Trends of antimicrobial consumption in calves and resistance in indicator *E. coli* from calves

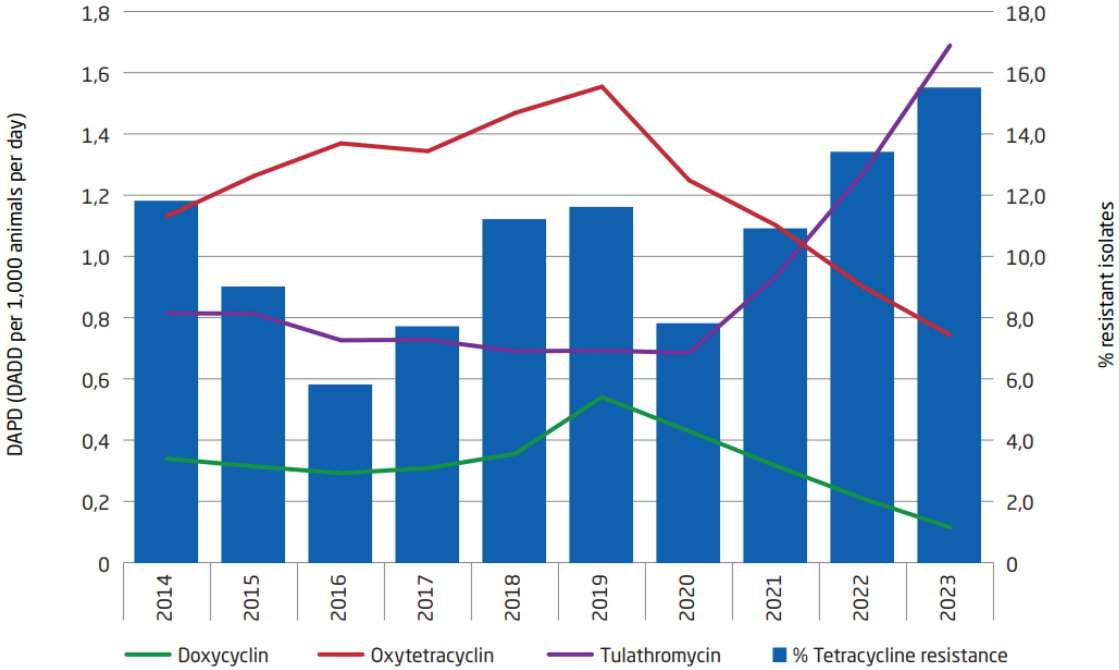
- **10-year increase in the consumption of macrolides and amphenicols in calves**

Figure 5.4 Amphenicol resistance (%) in indicator *E. coli* and florfenicol consumption (DAPD) in calves, Denmark, 2014-2023



- increased use of **florfenicol** -> increase in **chloramphenicol** resistance

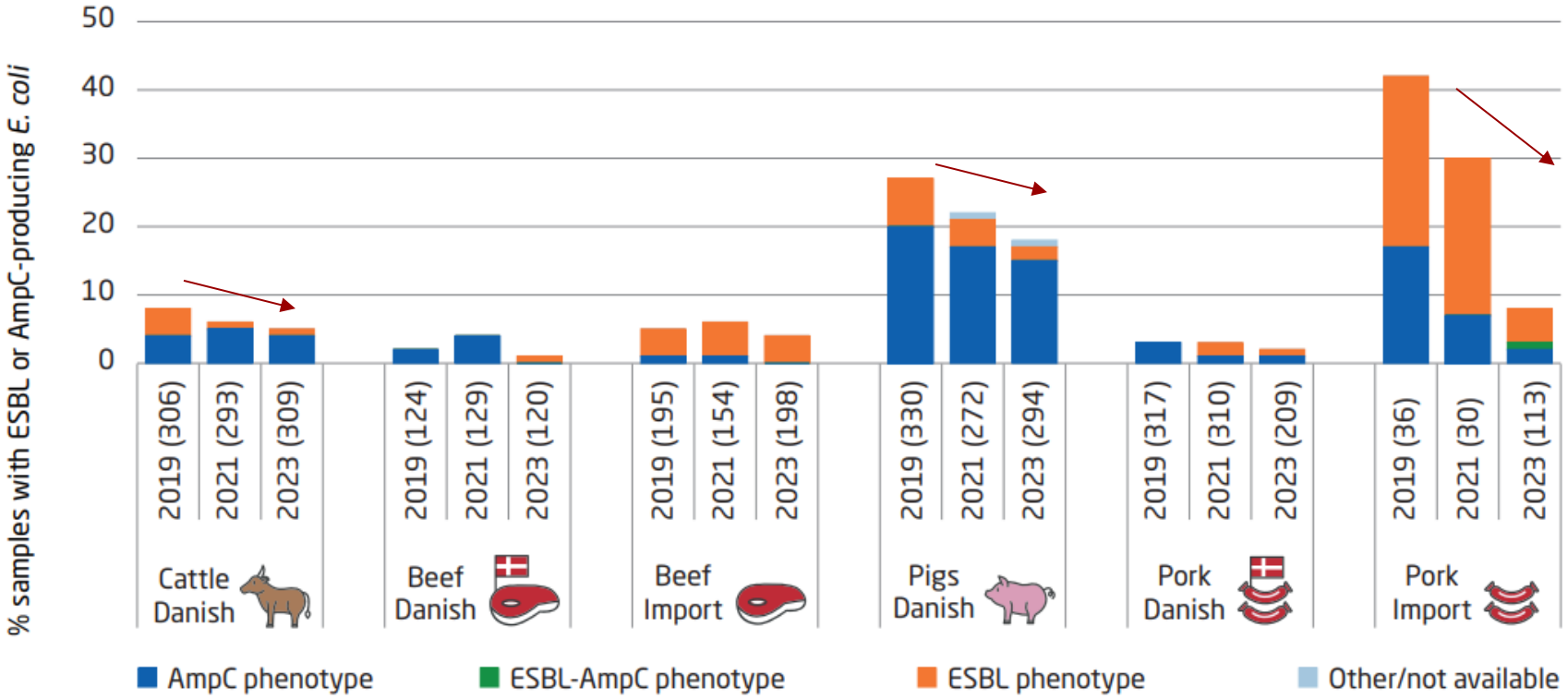
Figure 5.5 Tetracycline resistance (%) in indicator *E. coli* and antimicrobial consumption (DAPD) in calves, Denmark, 2014-2023



- increased use of **tetracycline** (until 2019) + increased use **tulathromycin** (after 2019) -> increase in **tetracycline** resistance

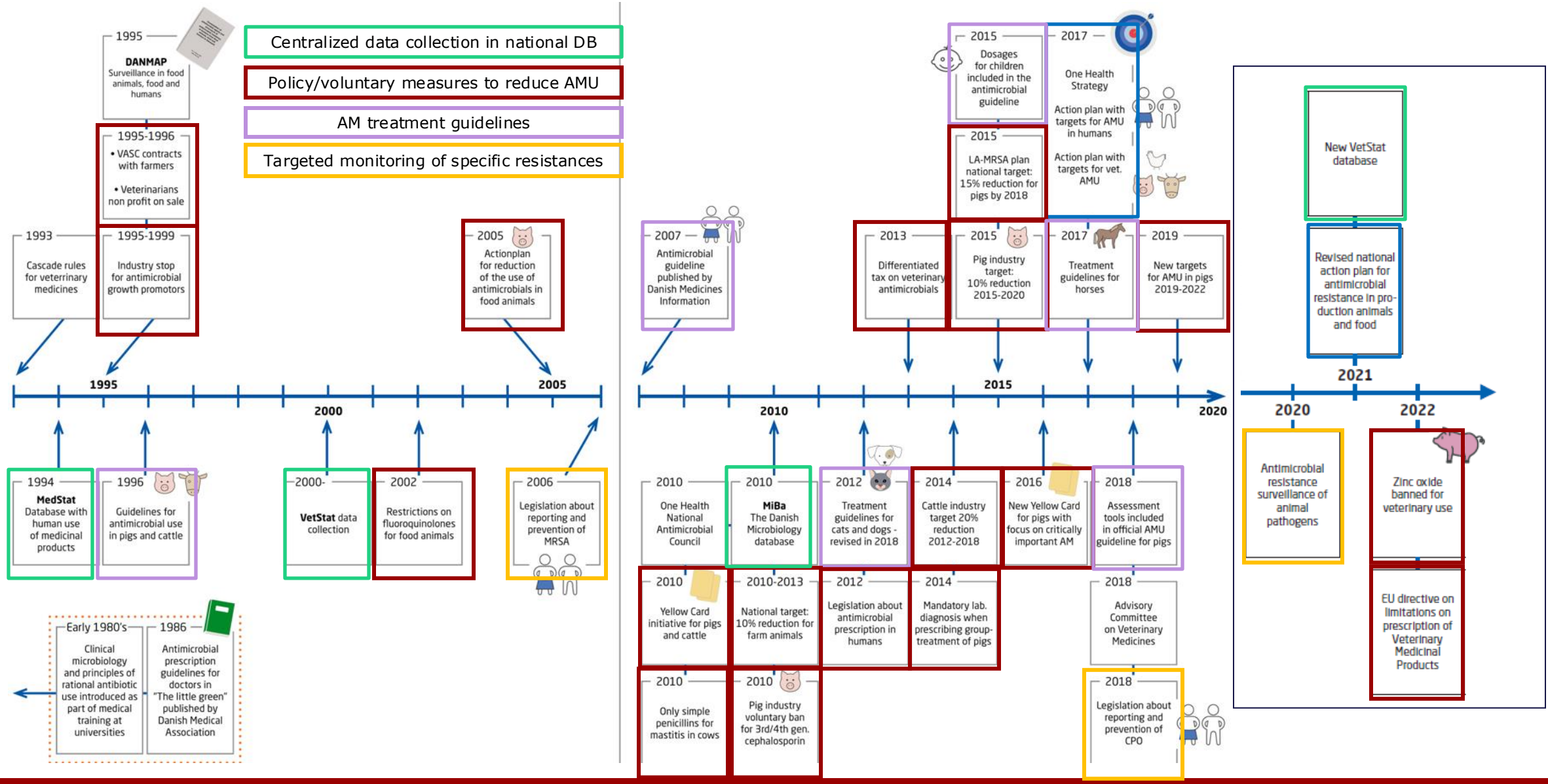
Decreasing trends in ESBL/AmpC- producing *E. coli*

Figure 5.2 Occurrence (%) of samples with phenotypic ESBL- or AmpC-producing *E. coli* from animals and meat recovered by selective enrichment, Denmark, 2019-2023



Perspectives

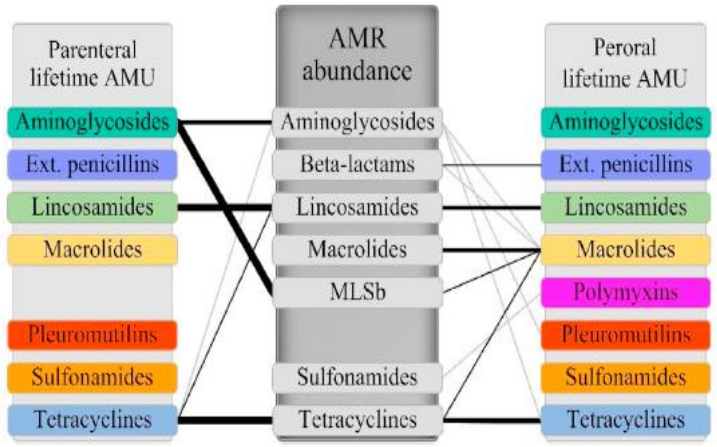
(Continuous) Initiatives to Prevent and Control AMR



DANMAP data for research

AMU -> AMR relationship:

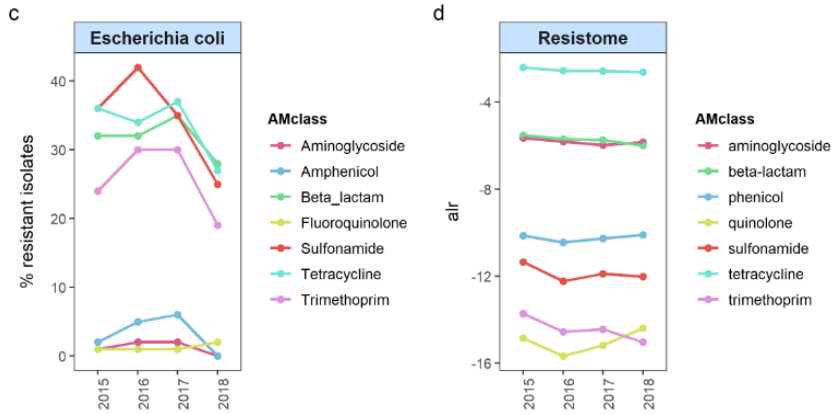
- Generate knowledge on how AMU influences the amount of potential zoonotic AMR in pig production



https://doi.org/10.1017/S0950268817001285

New AMR monitoring methods:

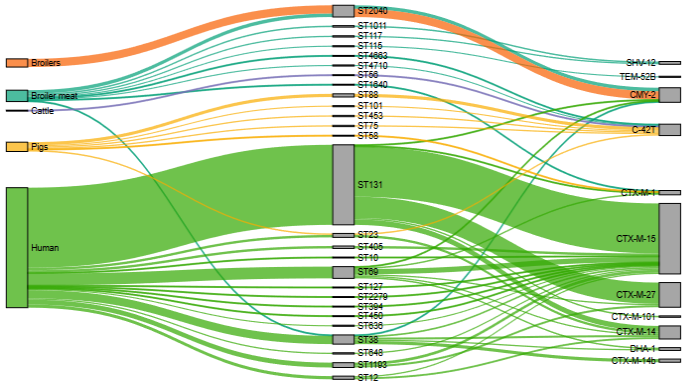
- Investigate if metagenomics is a valid approach for AMR monitoring in healthy animal populations



https://doi.org/10.2807/1560-7917.ES.2023.28.20.2200678

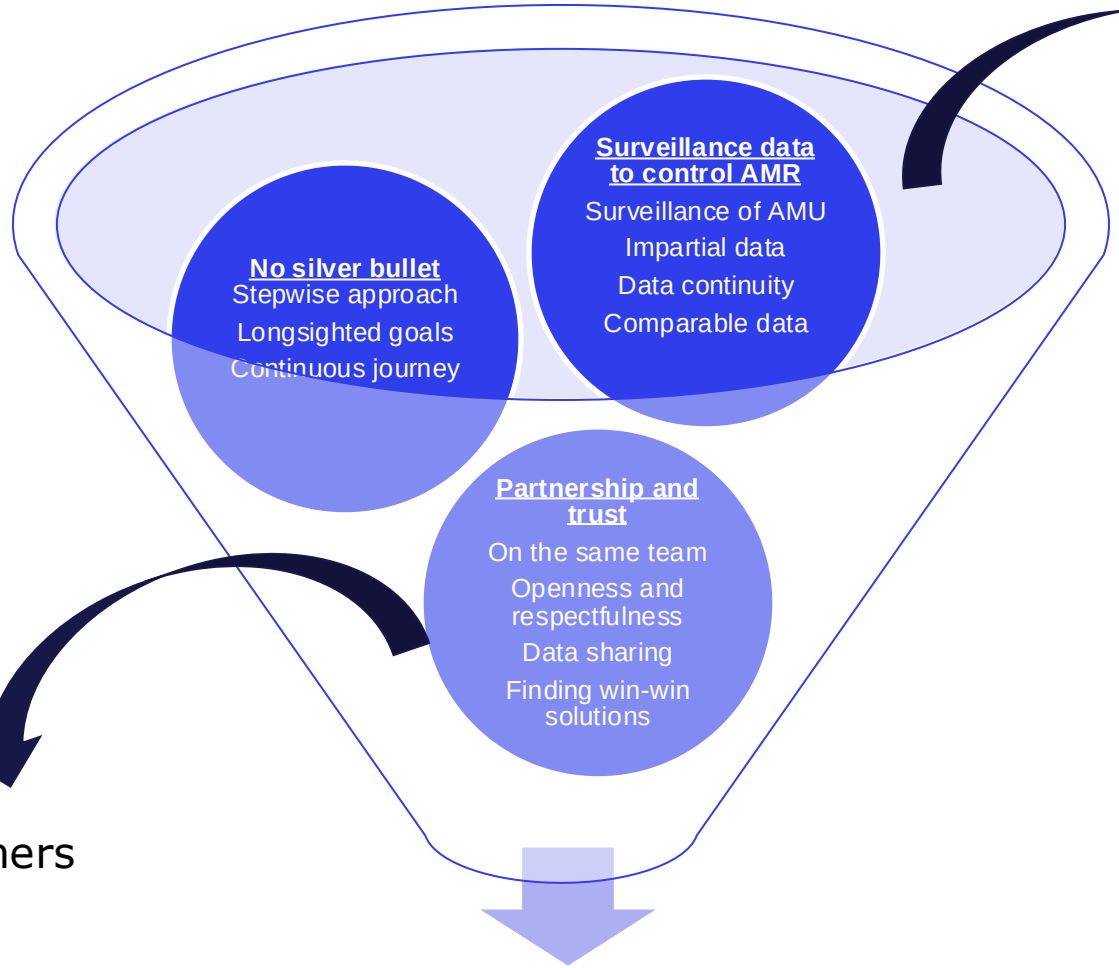
AMR transmission:

- Investigate the zoonotic transmission of ESBL-producing *E. coli*



3-one-health.jpg (1183×1572) (danmap.org)

DANMAP – a 30-year-old One Health collaboration



Ensure data continuity and harmonization

Comparable AMU units across sectors

Comparable AMR data across sectors

Accomodating new partners

Data sharing challenges

For further information – www.danmap.org

Contact:

Senior researcher Ana Sofia Ribeiro Duarte - asrd@food.dtu.dk

Senior researcher Vibe Dalhoff Andersen vdan@food.dtu.dk