Ministry of Food, Agriculture and Fisheries of Denmark
Danish Veterinary and Food Administration

STATENS SERUM INSTITUT

WORKING WITH ONE HEALTH AMR IN DENMARK

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Danish Veterinary and Food Administration

BACKGROUND - DENMARK

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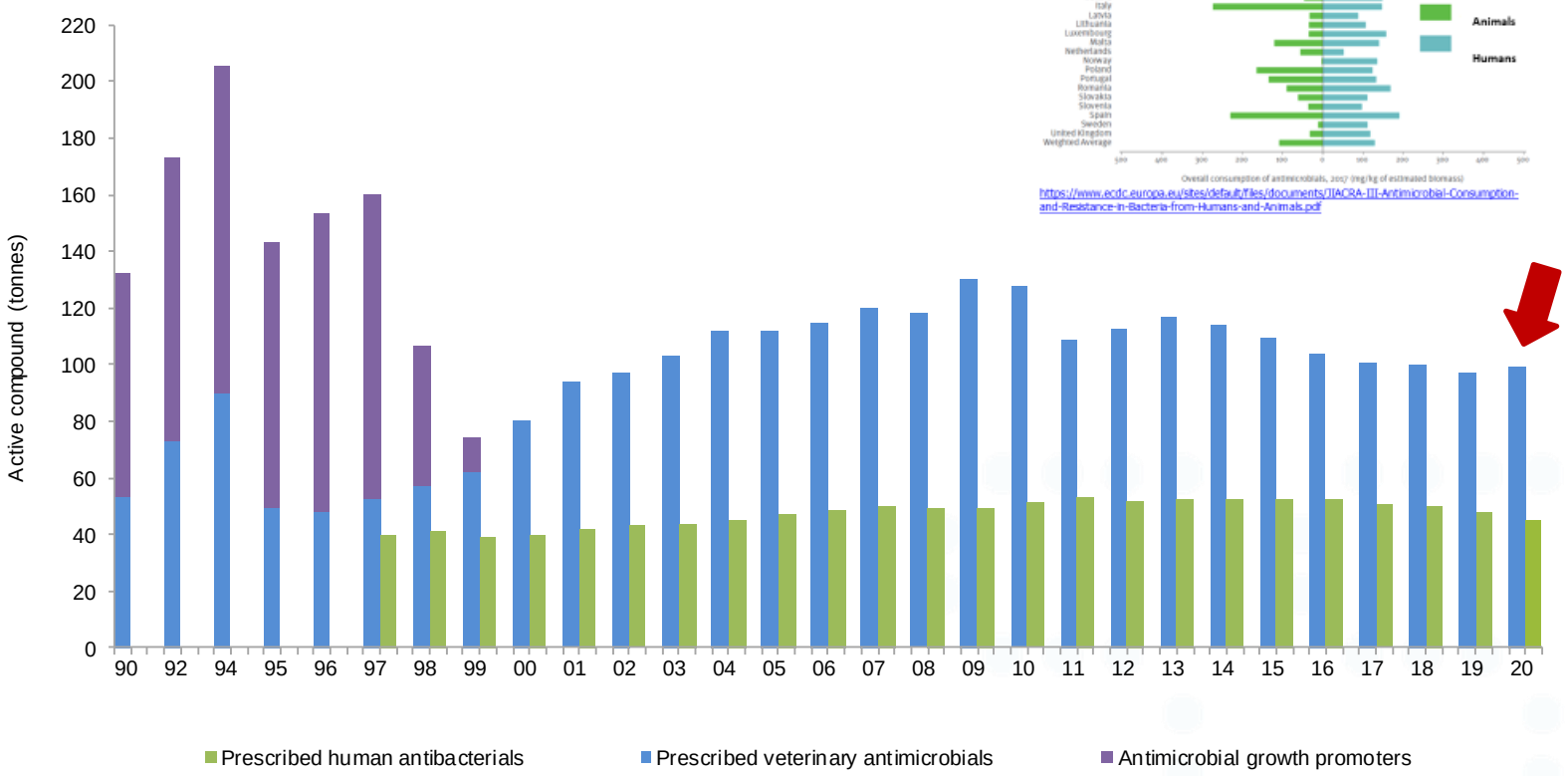
- Population 2020: 5.8 mill (1.8 mill in Capital Region)
- Population density: 720 in capital region – 75 persons per 1000m2 in rural areas
- Number of avoidance index: 23
- Power distance index: 18

- All acute care hospitals are public
- Very high turnover of patients at hospitals, increasing number of follow-up at the GP

- Population of pigs: 32,025 (million heads in 2020)
- Veterinary practices associated with the main pig production: 7

Antimicrobial consumption in Denmark, 1990 –2020



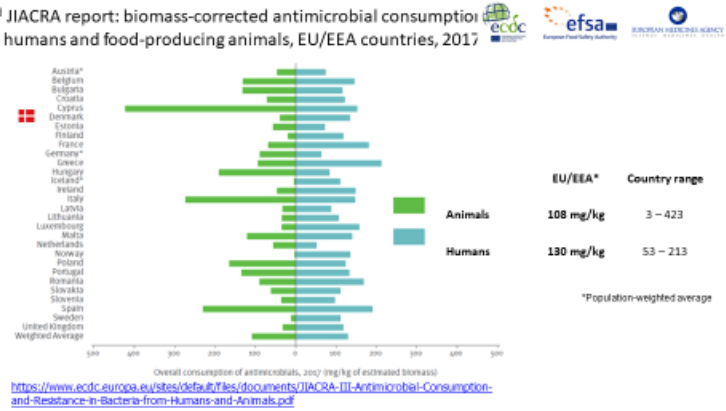
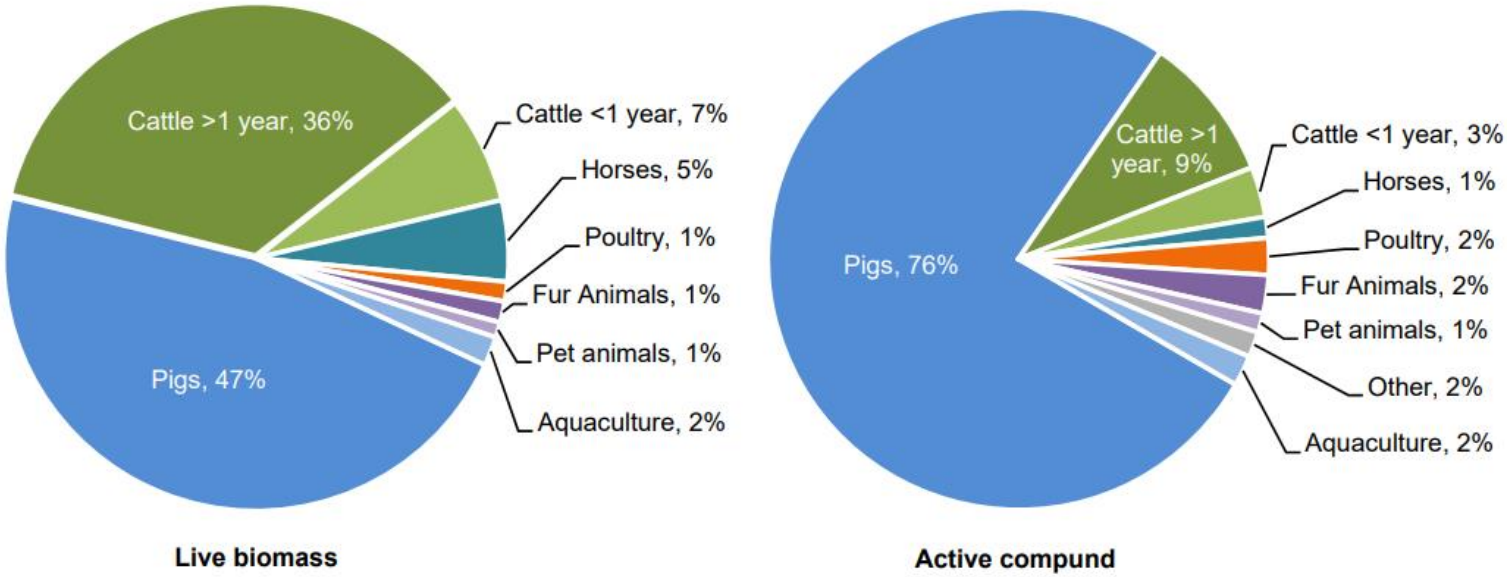


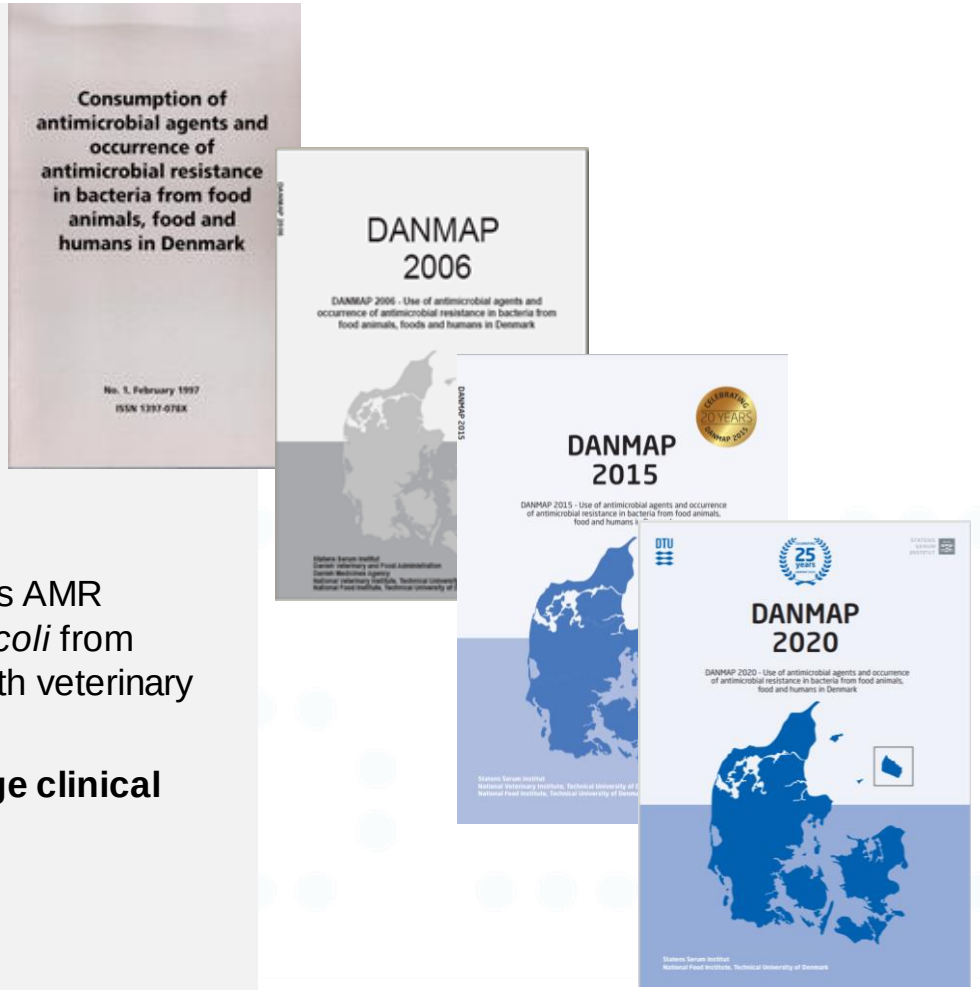
Figure 4.2 Distribution of live biomass and antimicrobial consumption in main animal species, tonnes, Denmark DANMAP 2020



The live biomass is estimated from census data (pigs, cattle and pet animals) and production data (poultry, fur animals, and aquaculture). The live biomass estimates for poultry (turkeys and broilers), aquaculture, horses and pet animals are based on 2012 data and may well be underestimated. The estimation procedures are described in section 9.2

DANISH INTEGRATED ANTIMICROBIAL MONITORING AND ANTIBIOTIC RESEARCH PROGRAMME

- **Established 1995**
- **Collaborative project:**
  - National Food Institute
  - Statens Serum Institut
  - Danish Veterinary and Food Adm.
  - Danish Medicines Agency
- **Yearly reports since 1997**
- **Main deliverables:** *E.coli* and Enterococci as AMR indicator bacteria from animals and meat, *E.coli* from human clinical infections, antibiotic use in both veterinary and human health sector
- **Coverage AMU**: 100% since 2002, **Coverage clinical AMR in humans**: 100% since 2015.



Core principles in AMR work - ways of working based on

- Multilateral approach
- Empowerment and Ownership
- Transparency and Trust
- Diagnostics and Data

THE MULTILATERAL APPROACH

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Strong collaboration between veterinary, food and human sector regarding foodborne infections since 1960´s

High level of research in AMR undertaken across institutions (universities, SSI, hospitals)

- integration of findings in surveillance programmes, guidelines and recommendations

Strong tradition for microbiological sampling and diagnosis

- Plenty of data – results being fed back encourages further sampling

High quality and granularity of data and exchange of methods and knowledge between microbiological laboratories

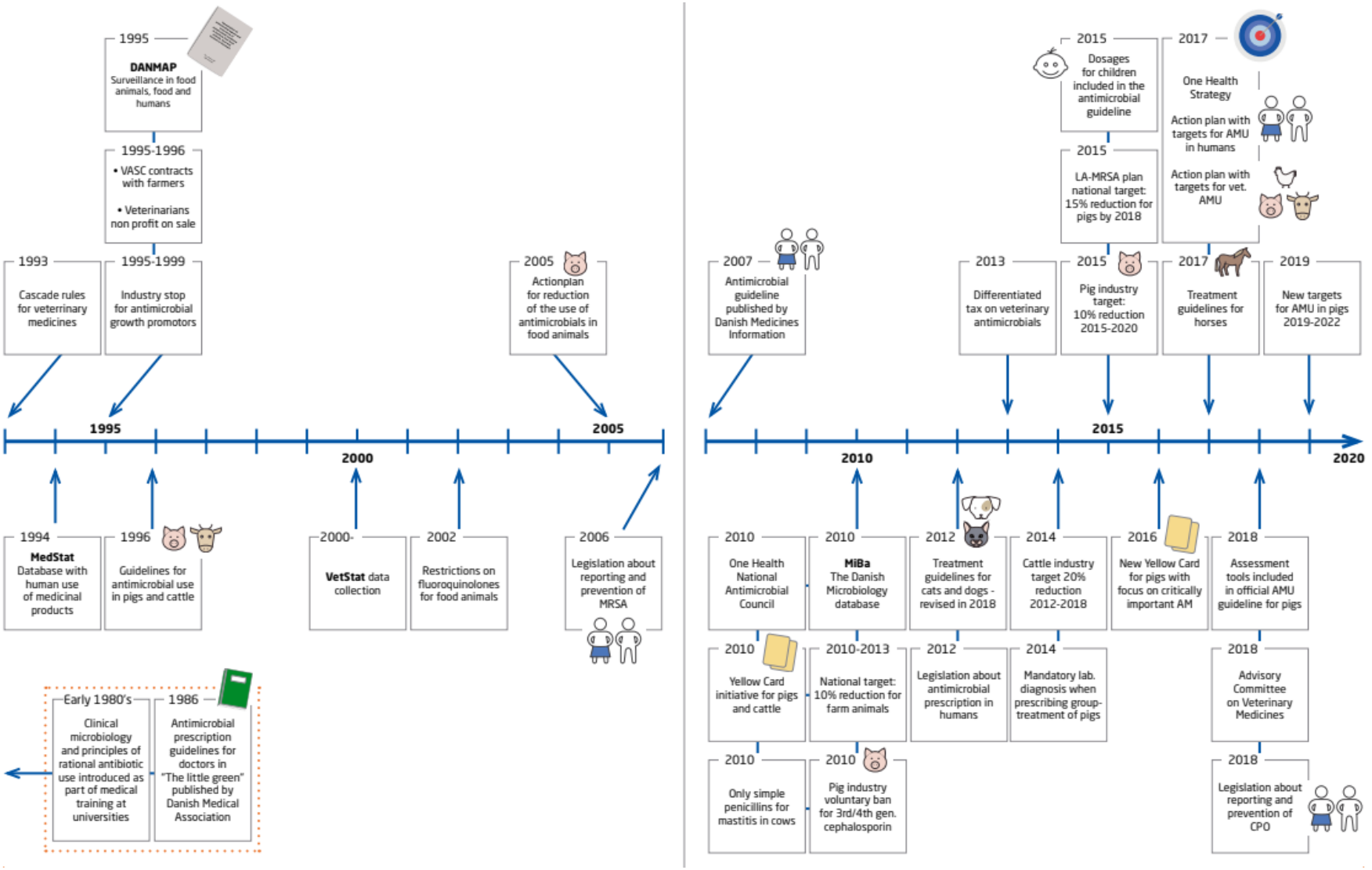
- EQA, ring trials, local laboratory quality models

Strong focus on animal health, biosafety and –security

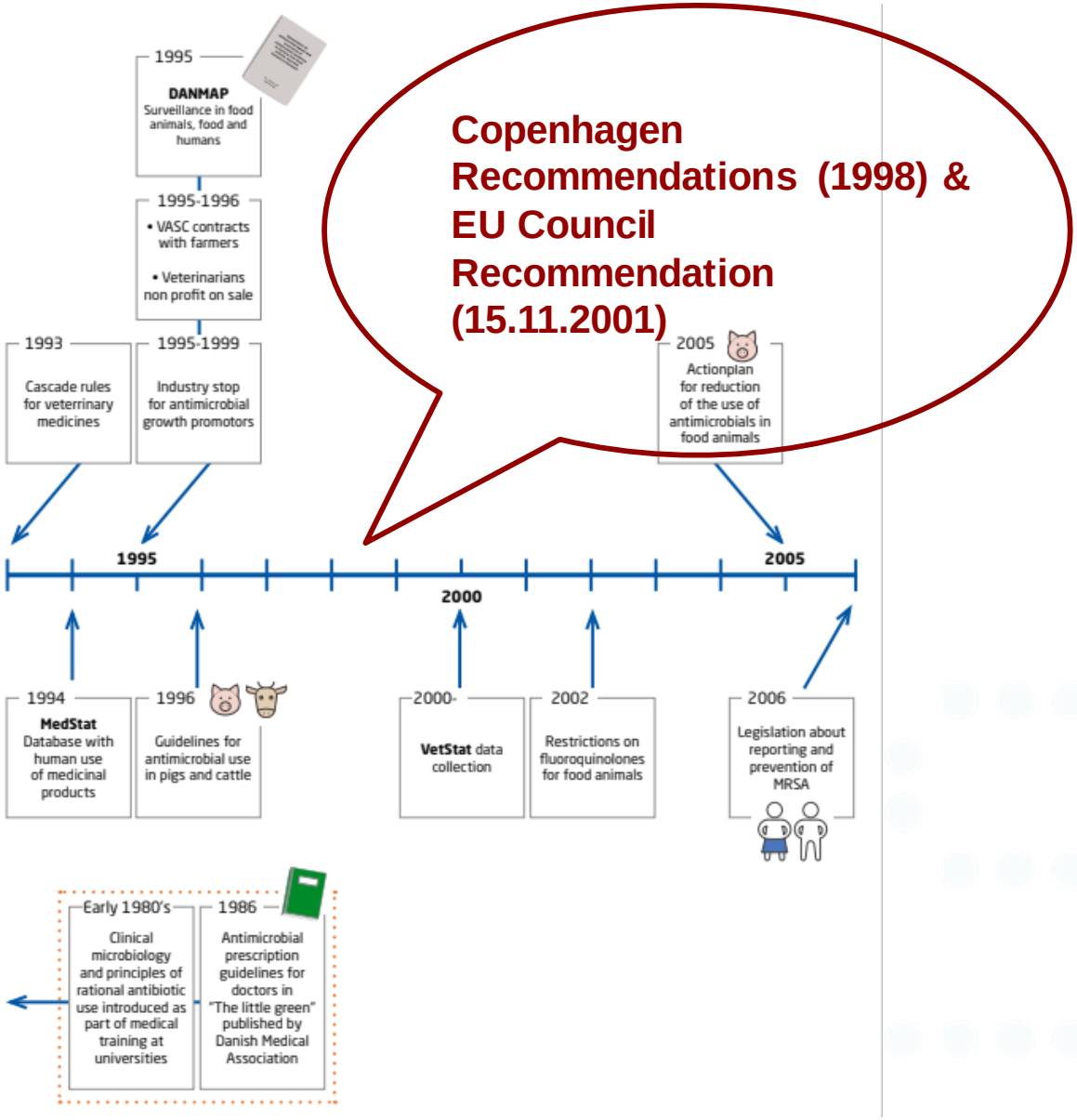
- Initiatives by producers, industry and authorities alike

Networks and regular meetings between authorities and interest groups (producer, food industry, consumer)

Timeline – actions against AMR



Timeline – actions against AMR



DANISH MINISTRY OF HEALTH

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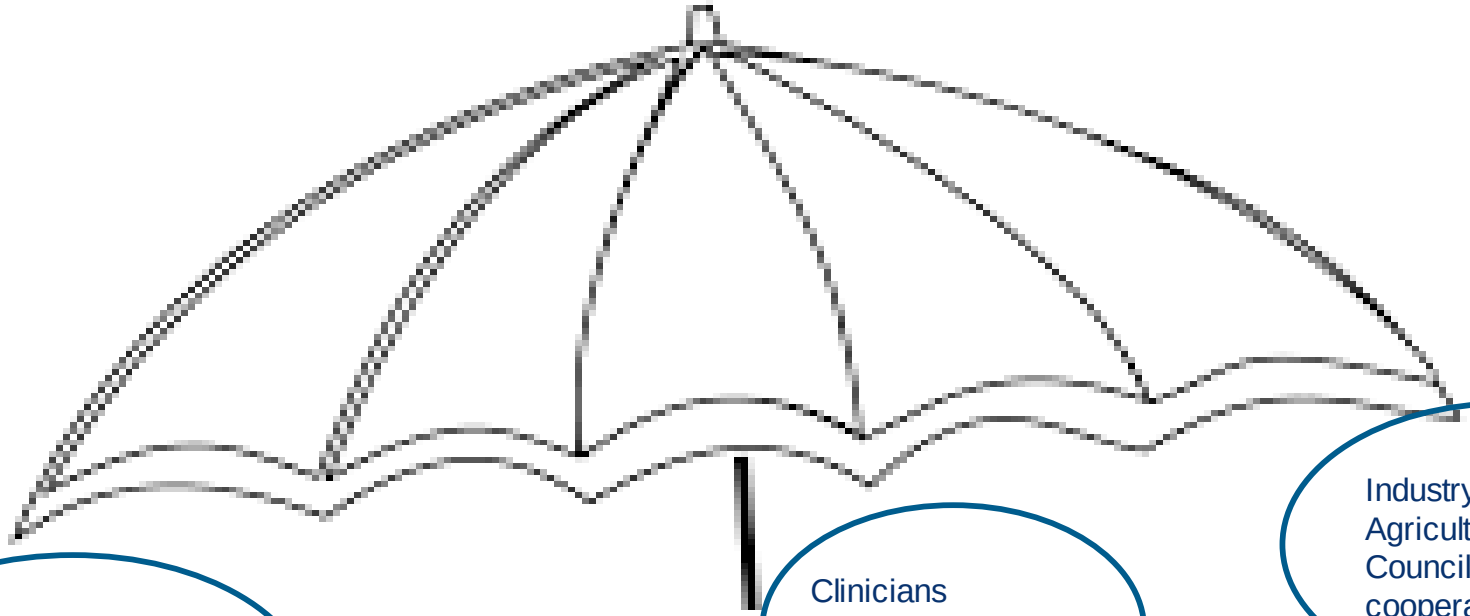
Establishment of the national antibiotic council 2010



Danish Health Authority, Danish Health Data Authority
Statens Serum Institut

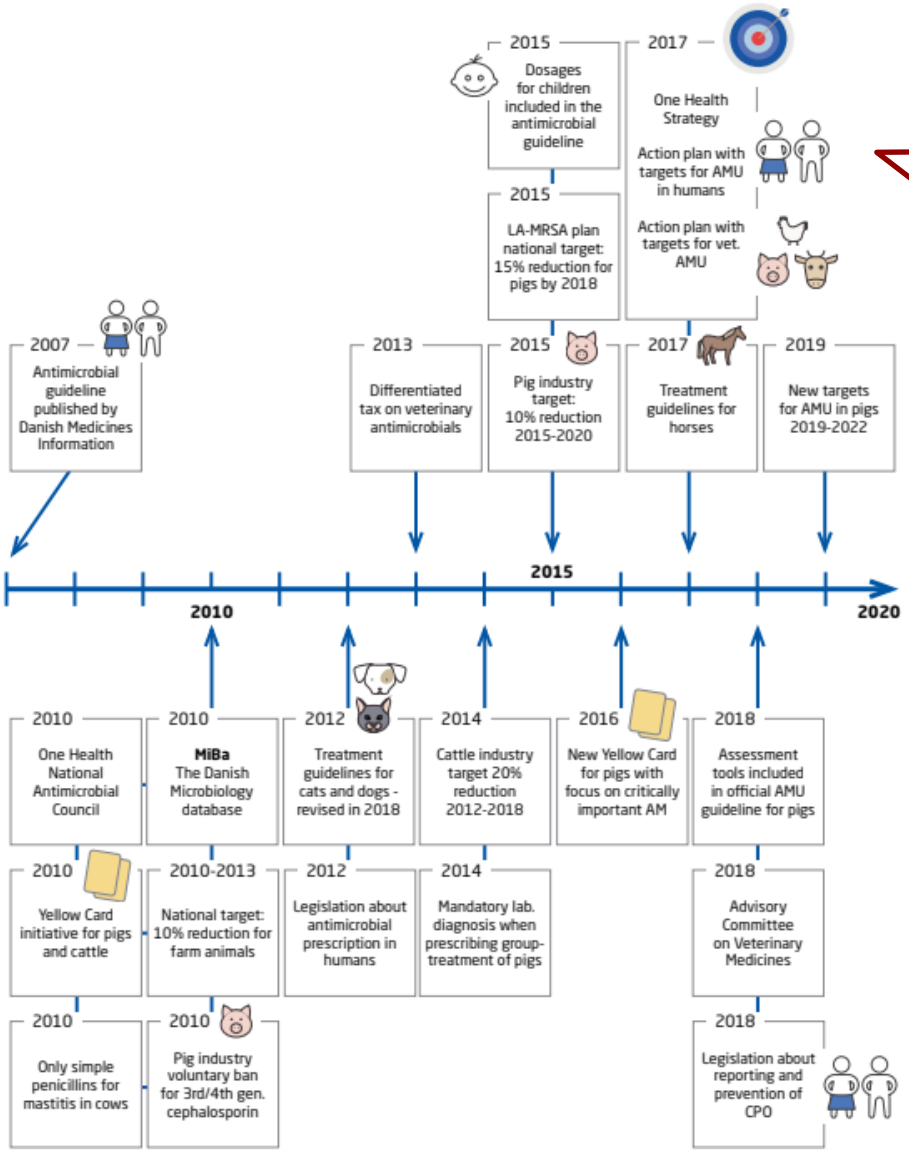
Danish Veterinary and Food Administration
Danish Technical University

Clinicians
Medical and Veterinary Association

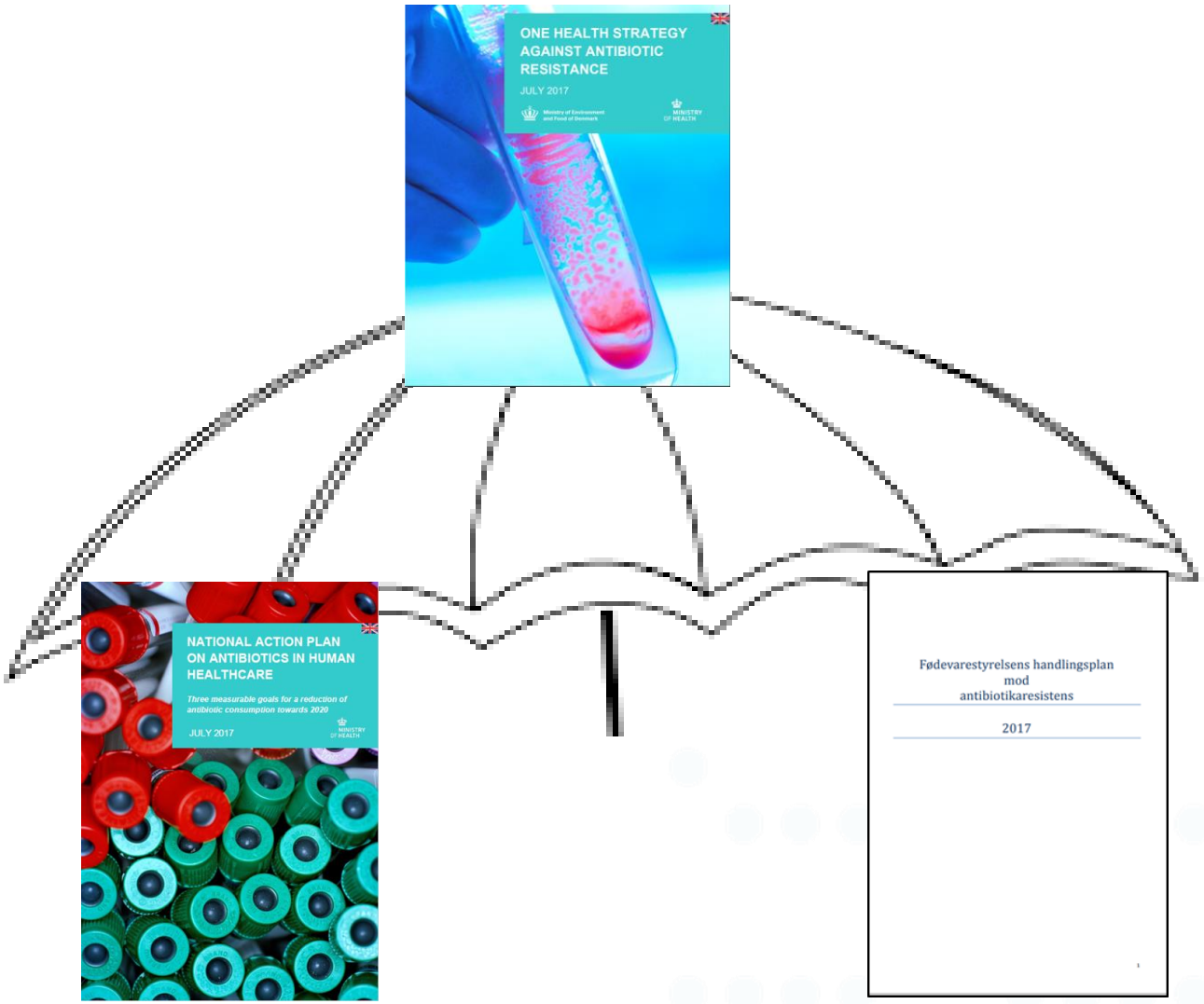
Research institutions

Industry (Danish Agricultur and Food Council, pharmacy cooperation)

Timeline – actions against AMR



2017,
National Action Plans with specific targets on both veterinary and human side


ONE HEALTH STRATEGY AGAINST ANTIBIOTIC RESISTANCE
JULY 2017
NATIONAL ACTION PLAN ON ANTIBIOTICS IN HUMAN HEALTHCARE
Three measurable goals for a reduction of antibiotic consumption towards 2020
JULY 2017
Fødevarestyrelsens handlingsplan mod antibiotikaresistens
2017

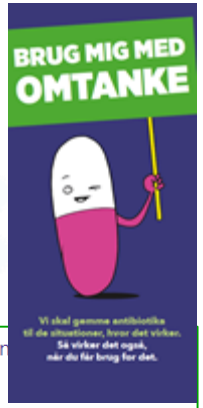
One Health strategy against AMR, 2017

- AMR moves between sectors
- The Ministries work together
- One Health strategy in july 2017 for reduction of antibiotic use and prevention of resistance among humans and animals – 5 overarching goals
- A framework for the collaboration between sectors and with the intention to strengthen collaboration
- At the moment: status making and mapping of initiatives

- National Action Plans 2017
  - Defining objectives and targets
  - Monitoring of goals

- Updates of treatment guidelines and guidelines on the management specific AMR (MRSA, CPO)

- Inform development of campaigns
- Training of farmers and others in infection prevention



- Research

Harmonisation of resistance monitoring programmes in veterin
urgent need in the EU?
Silley P, de Jong A, Simjee S, Thomas V.
Int J Antimicrob Agents. 2011 Jun;37(6):504-12. doi: 10.1016/j.ijantimicag.2010.12.002. Epub 2011 Feb 3.

Spatial scan statistics to assess sampling strategy of antimicrobial resistance monitoring program.
Vieira AR, Houe H, Wegener HC, Lo Fo Wong DM, Bødker R, Emborg HD.
Foodborne Pathog Dis. 2009 Jan-Feb;6(1):15-21. doi: 10.1089/fpd.2008.0132.
PMID: 18991541

Reporting the national antimicrobial consumption in Danish pigs: influen
assigned daily dosage values and population measurement.
Dupont N, Fertner M, Kristensen CS, Toft N, Stege H.
Acta Vet Scand. 2016 May 3;58(1):27. doi: 10.1186/s13028-016-0208-5.
PMID: 27142975 Free PMC article.

Figure 3.3 Goal 1: Total number of prescriptions for antibiotics in primary health care, Denmark, 2016-2020

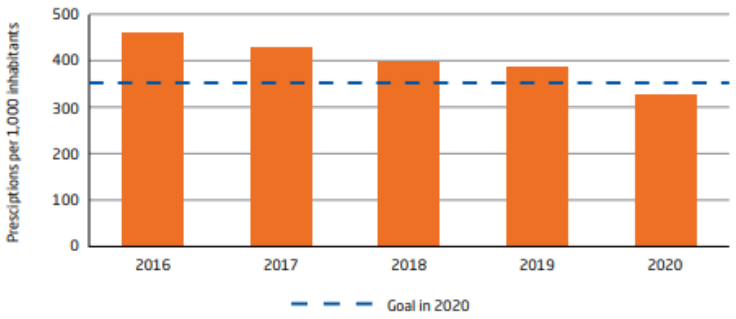


Figure 3.4 Goal 2: Proportion of penicillin V compared to total antibiotic consumption in primary health care, Denmark, 2016-2020

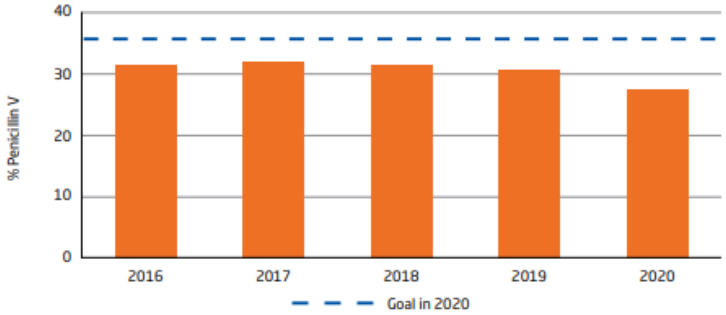
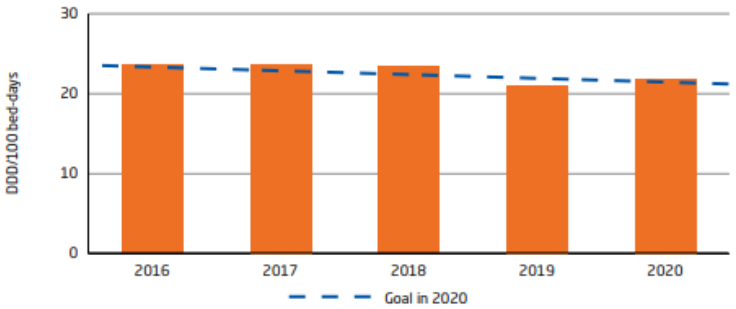


Figure 3.5 Goal 3: Consumption of critically important antibiotics (cephalosporins, fluoroquinolones, carbapenems) in hospitals, Denmark, 2016-2020



How did it go with the human NAP:

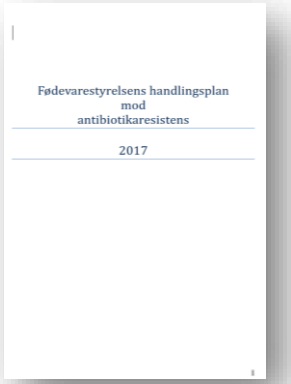
Goal 1 (reduced prescribing among GPs) reached;

Goal 2 (proportion of penicillin V prescribed in Primary care should reach 36%): not reached.

Goal 3 (more rational use of antibiotics at hospitals) almost reached.

The Danish Veterinary and Food Administration's national action plan for antibiotic resistance in production animals and food

2017 - 2020



2021 - 2023

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The Danish Veterinary and Food Administration's national action plan for antibiotic resistance in production animals and food 2021-2023

1. A prudent use of antibiotics to reduce the incidence of resistance
2. Greater efforts to prevent infections and to facilitate antibiotic alternatives
3. Enhanced knowledge to improve targeted measures
4. Information and guidance on resistance and transmission
5. A strong international cooperation to minimise the development of antibiotic resistance

The NAP has several goals and initiatives to obtain the overall goal and the 5 objectives

Ministry of Food, Agriculture and Fisheries of Denmark
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The Danish Veterinary and Food Administration's national action plan for antibiotic resistance in production animals and food 2021-203

Objective 1
A prudent use of antibiotics to reduce the incidence of resistance

Goals

– Achieve a reduction of 2 per cent per year (2019–2022) in the use of antibiotics for pigs, and maintain or reduce the use of antibiotics for other livestock species.
– Maintain low use for production animals of those antibiotics that are critically important for treating humans (2019 level).

LESSONS LEARNED

Aim for actions that make sense

Use your established networks

Build on each others knowledge

No need to wait

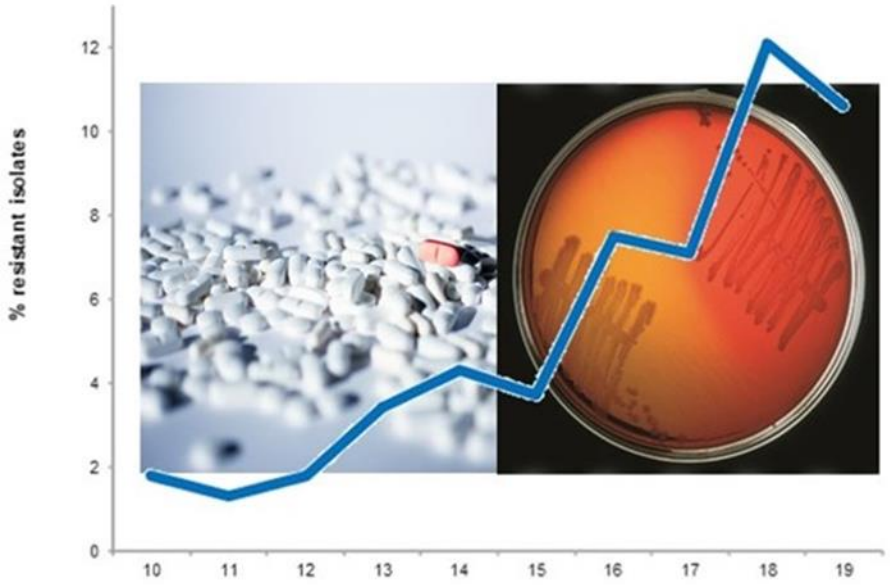
Use your data – feed it back!

Evaluation is necessary

Collaboration and initiatives will need governmental support to become sustainable

Regular meetings and knowledge sharing will increase the chances for success

THANK YOU FOR THE ATTENTION



Thank you to our colleagues in the AMR One Health Network Group