



WOAH Collaborating Centre  
for Food Safety



# Monitoring Systems for Antimicrobial Use in Livestock

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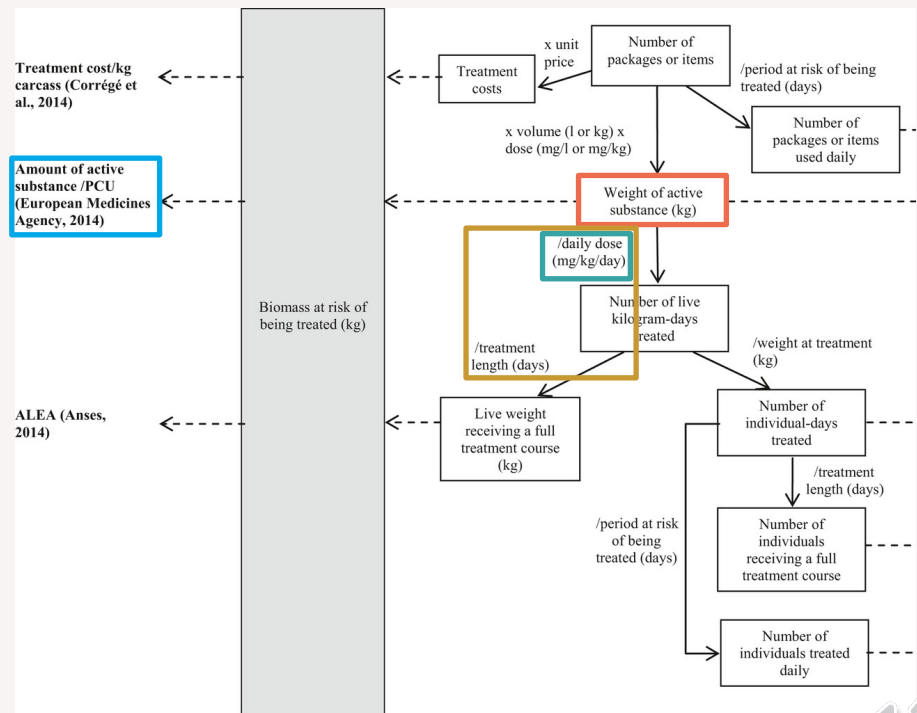
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# Indicators used in monitoring systems in AMU

- **Active ingredient weights** (WOAH)
- **Active ingredient weights adjusted by population collection unit** (PCU) (WOAH)
- **DDDvet**: Defined daily doses for animals (European Medicines Agency)
- **DCDvet**: Defined course doses for animals (European Medicines Agency)
  - $DDD_{vet} \times \# \text{ Treatment days}$
- **DDD and DCDs adjusted for each country**
  - DADD (Denmark)
  - DCDse (Sweden)



# AMU monitoring system in Netherlands

■ Organizer Netherland Veterinary Medicines Institute

■ Indicator DDDA (# Treatment days/year)

■ Data source Prescription data from veterinarians

## ■ **Benchmarking**

- DDDA of each farmer and each veterinarian is calculated yearly
- Farms and veterinarians are categorized with two threshold values (warning and action)
- Corrective actions are needed in farms and veterinarians in the action zone



# AMU monitoring system in Denmark

- Organizer Danish Integrated Antimicrobial Resistance Monitoring and Research Program
- Indicator Active ingredient weight, active ingredient weight/PCU, DADD (DDD adjusted for Denmark), DAPD (DADD/1,000 animals/day)
- Data source Prescription data from veterinarians
- **Benchmarking**
  - Indicator: # Treated animals/100 animals/day
  - Yellow Card scheme: Farms exceeding a threshold are ordered to reduce AMU by the government



# AMU monitoring system in Ireland

- Organizer Health Products Regulatory Authority
- Indicator Active ingredient weights
- Data source Sales data from wholesalers
- **AMU Pig system** (mandatory for farms with 200+ pigs)
  - Indicator Active ingredient weight adjusted by PCU



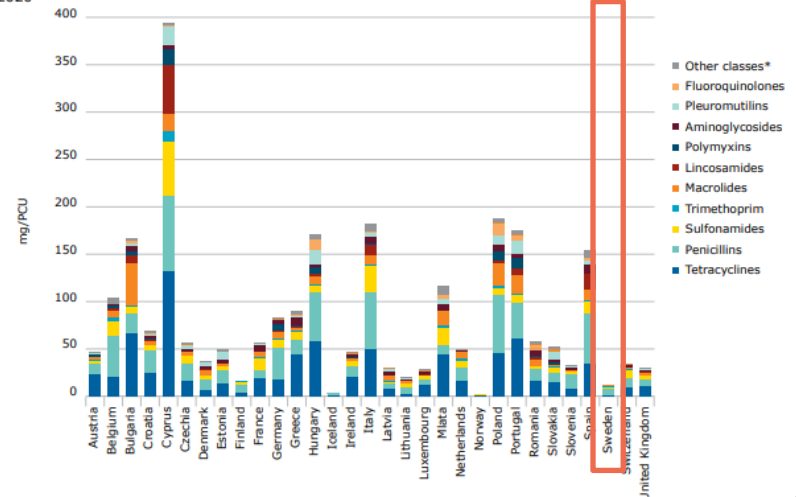
# AMU monitoring system in Sweden

- Organizer Swedish National Veterinary Institute
- Indicator Active ingredient weights/PCU, DCDvet, DCDse (DCDvet adjusted for Swedish pig farms)
- Data source Sales data from pharmacies

## ■ Long history of veterinary data collection

- 1971: Initiative to systemize veterinary medical records
- 1982: Launch of a data collection system of farm-level AMU
- 1984: Nationwide rollout of the system

**Figure 2.** Sales for food-producing animals, in mg/PCU, of the various antimicrobial classes, for 31 European countries, in 2020<sup>1</sup>



# AMU monitoring system in Thailand

- Organizer Thai Food Drug Administration
- Indicator Active ingredient weight, active ingredient weight/PCU
- Data source Production data from manufacturers and import data from importers
- **National Strategic Plan on AMR 2017-2022**
  - AMU in animals **decreased by 49%** during 2017-2019
  - Developing a surveillance system to monitor AMU for human and animals
  - Reclassifying of some antimicrobials to be prescription-only drugs
  - Prohibiting the use of antimicrobials as growth promoters



# AMU monitoring system in China

- No official monitoring for use of animal drugs
- Data source for the monitoring by WOAHA  
Sales data from manufacturers and importers
- 2018-2020: Action plan to reduce AMU in animals
  - Select model farms (~100 farms/year) to reduce AMU in the farms
- 2020: Prohibition of use of antimicrobials as growth promoters
- 2020: Amendments to the list of drugs and other compounds prohibited for use in food animals
- 2021-2025: National action plan to reduce AMU in animals
  - **AMU monitoring is planned**  
Require manufacturers to record their shipments in a national database





# AMU monitoring system in Japan

- Organizer National Veterinary Assay Laboratory
- Indicator Active ingredient weight
- Data source Sales data from manufacturers
- Researches in our university to improve AMU monitoring system in Japan
  - Assigned IDs to antimicrobials for livestock available in Japan
  - Developed DDDjp (DDD adjusted for Japan)
  - Developed and evaluated e-prescription system in pig to collect farm-level AMU data



# Information sources

- World Organisation for Animal Health, 2022. Annual Report on Antimicrobial Agents Intended for Use in Animals, 6th edition.
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