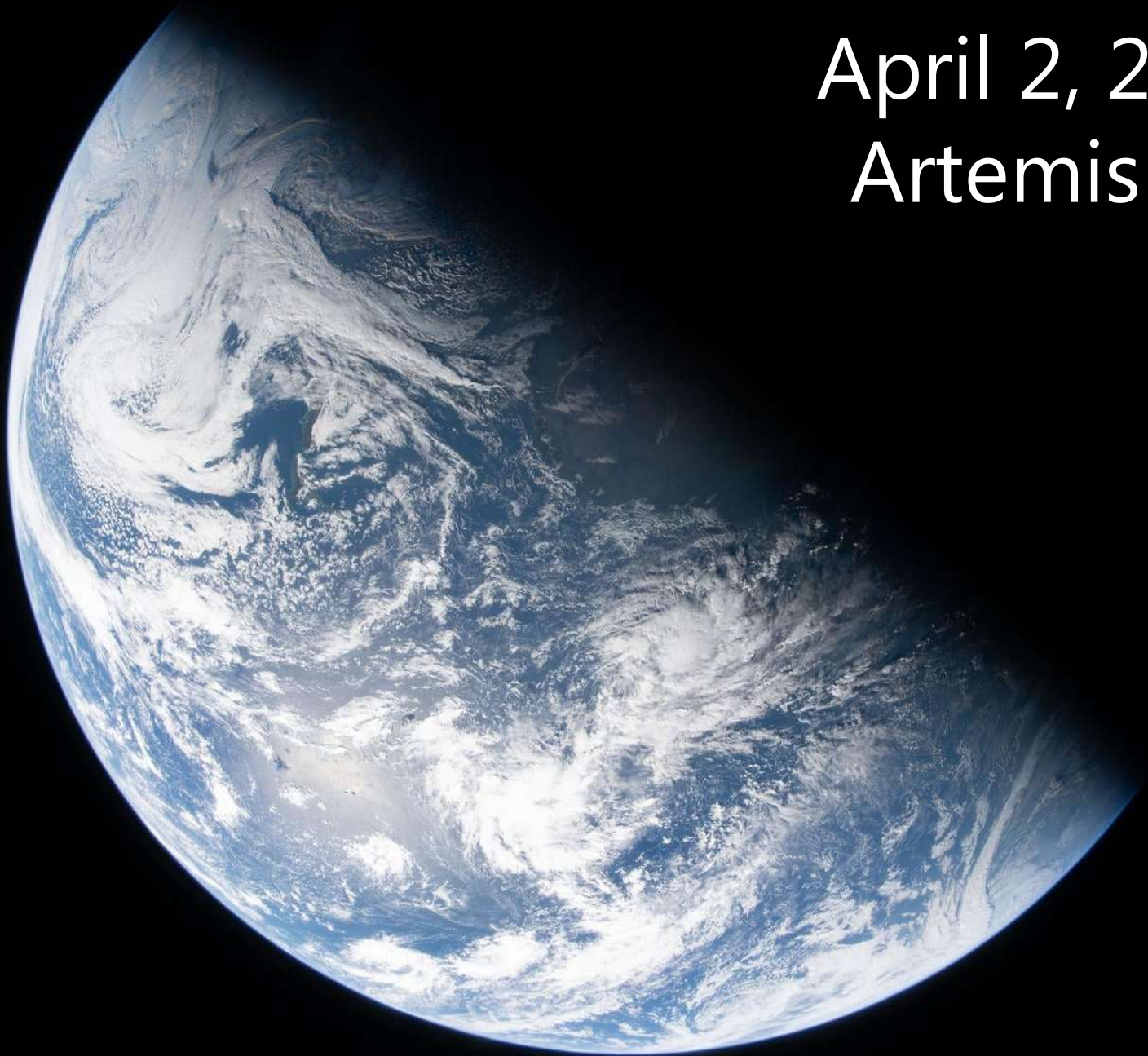


Danish experiences with reduced and responsible antibiotic use for pigs



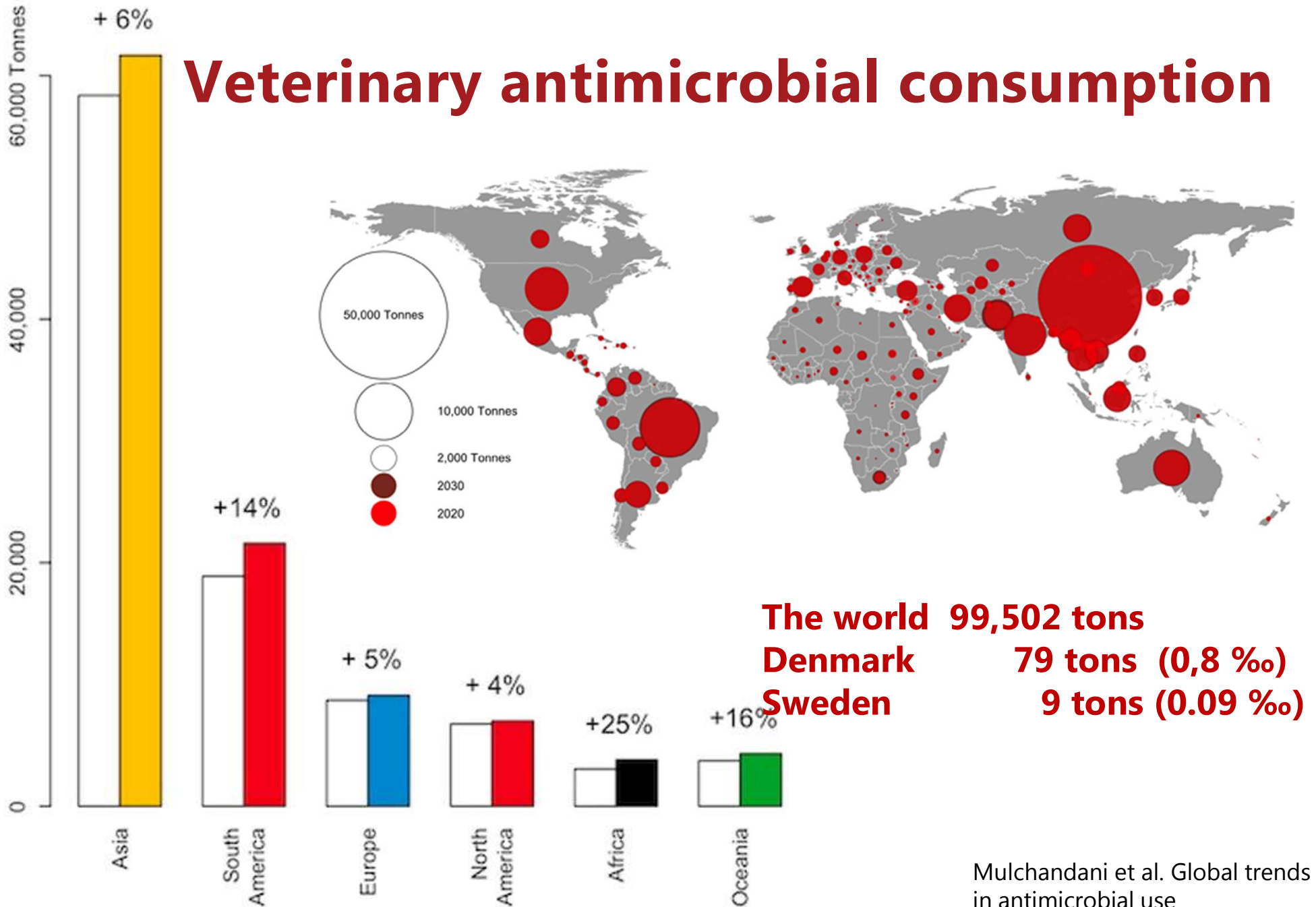
Jens Peter Nielsen

Professor, Pig Health

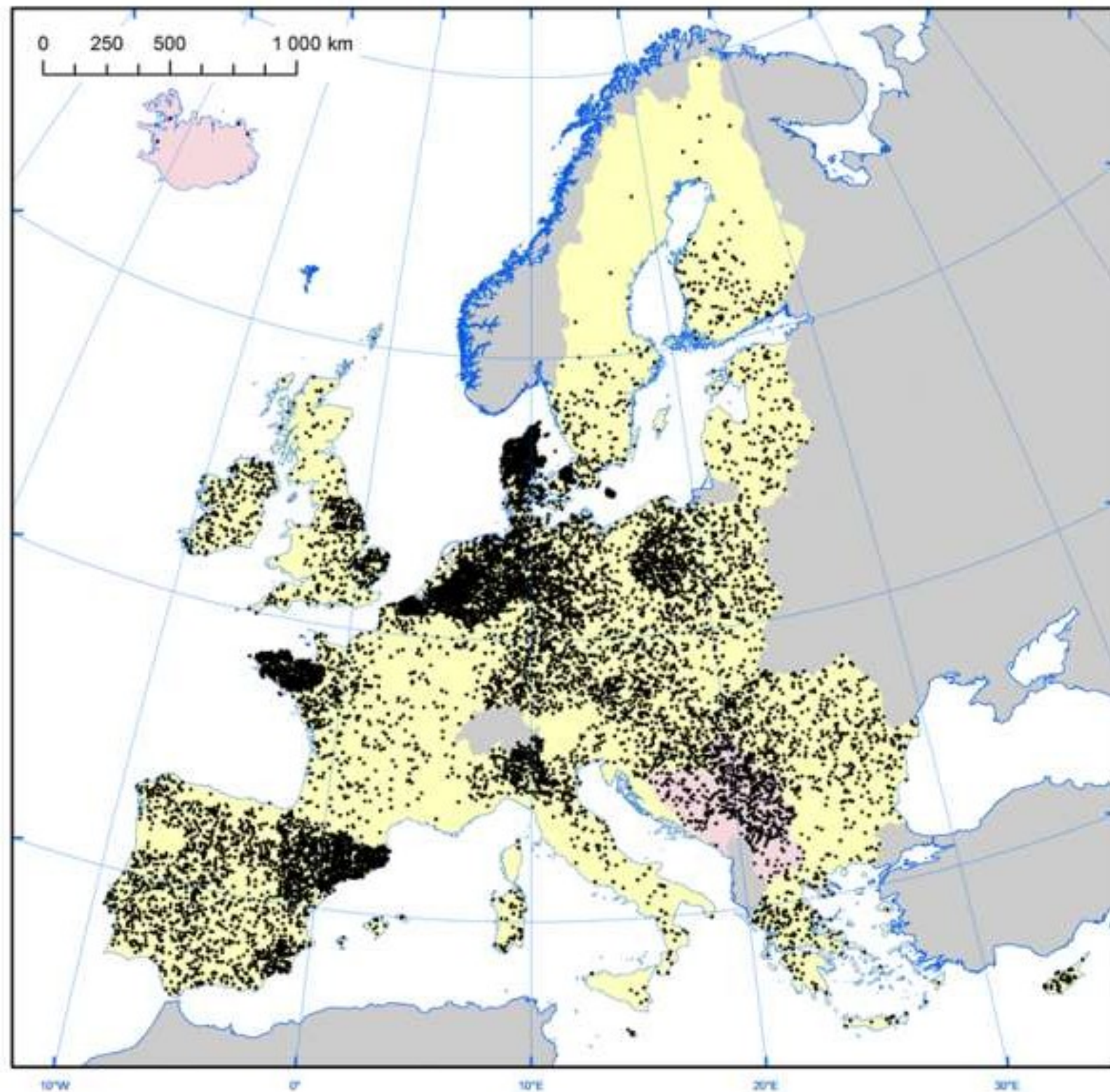


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Veterinary antimicrobial consumption



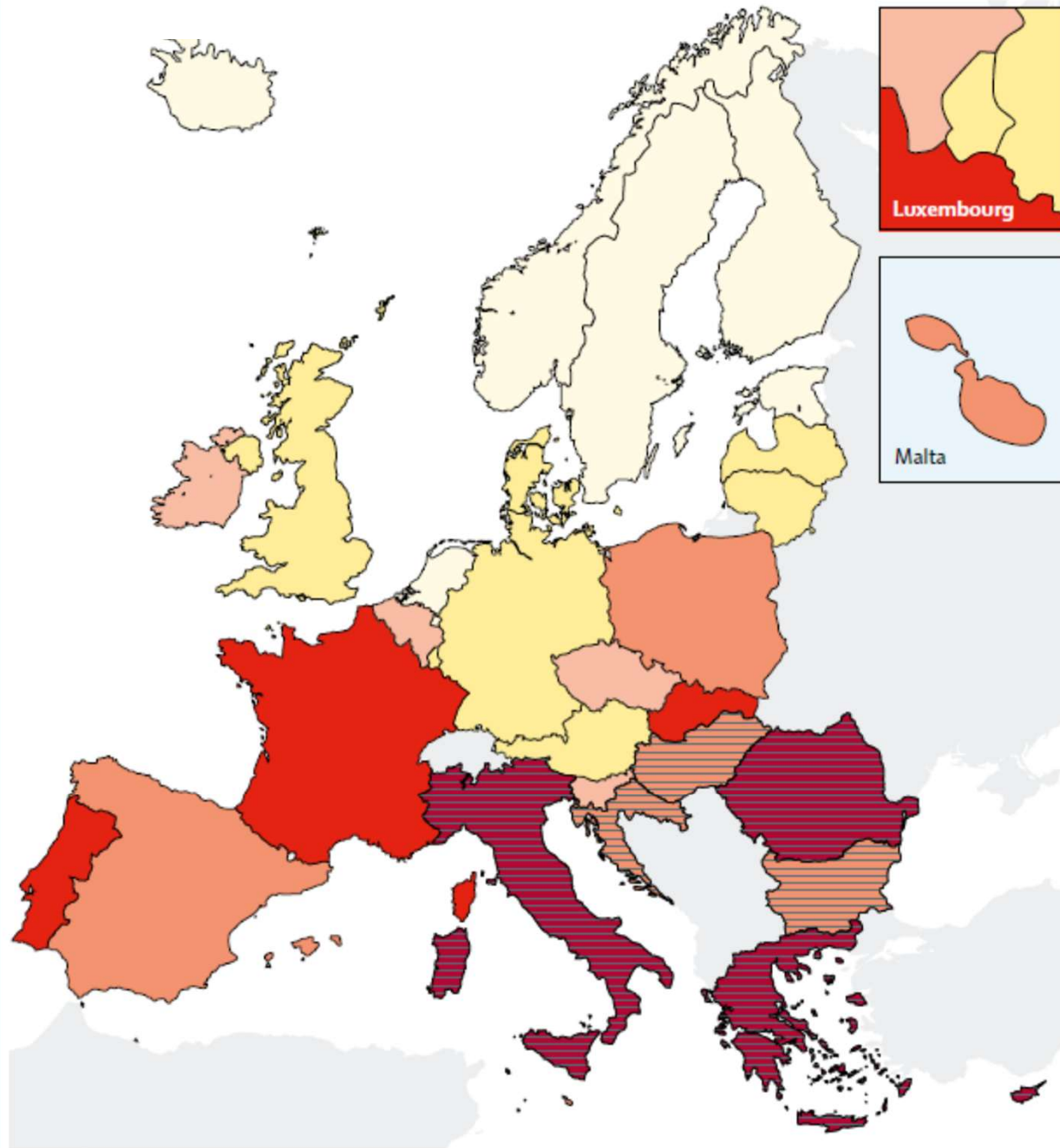
Pig density in the EU



DALYs per 100000 population

□ <50 □ 50-99 □ 100-149 □ 150-199 □ 200-249 □ >250

▨ Carbapenem colistin resistance >40% of total DALYs



The burden of antibiotic resistance in humans

DALYs = Disability Adjusted Life Years

The sum of years of potential life lost due to premature mortality and the years of productive life lost due to disability.

Cassini et al. The Lancet, 2019

Figure 4: Model estimates of the burden of infections with selected antibiotic-resistant bacteria of public health importance in DALYs per 100 000 population, EU and European Economic Area, 2015

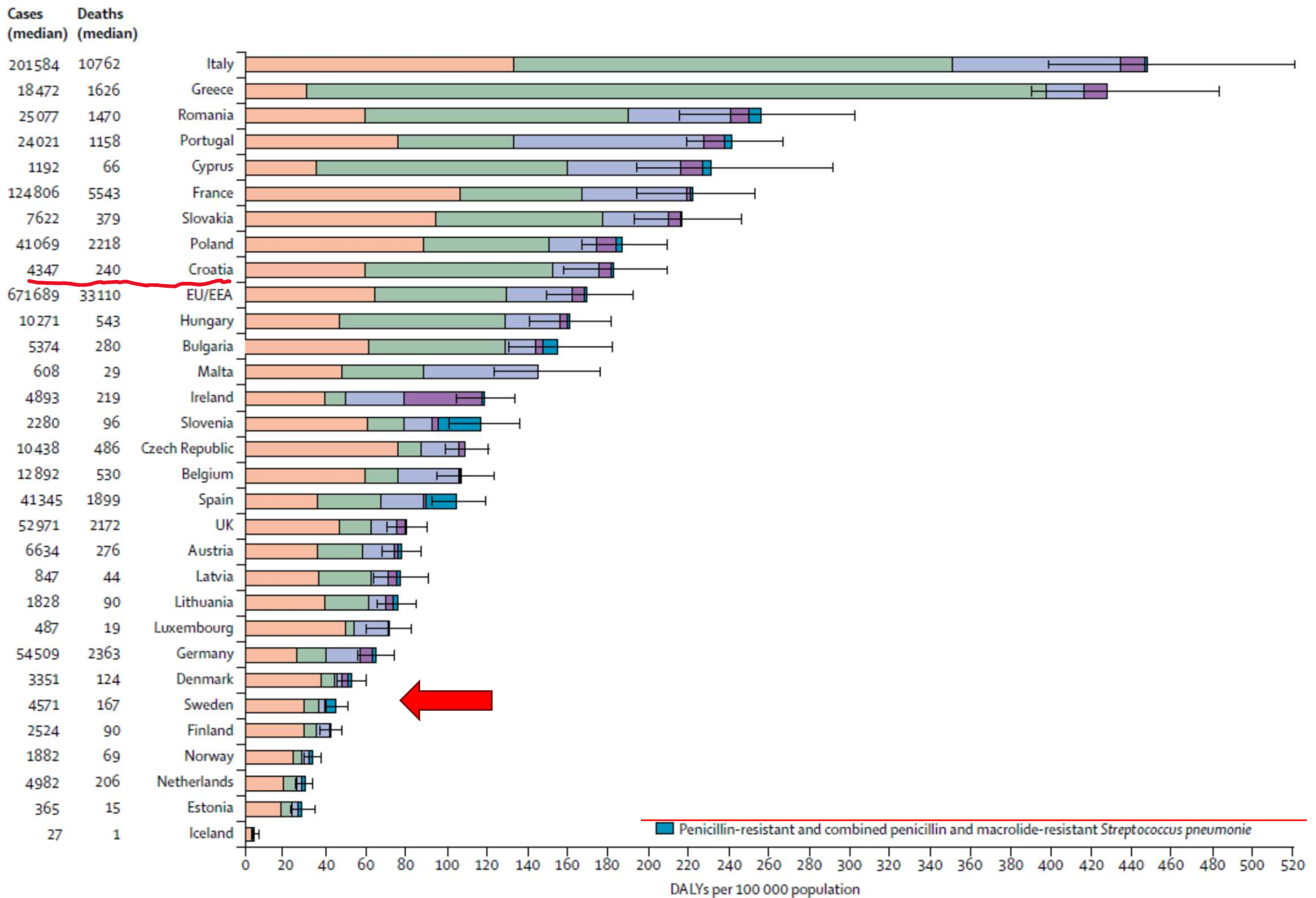


Figure 3: Burden of infections with antibiotic-resistant bacteria in DALYs, EU and European Economic Area, 2015

Responsible antibiotic use

- ✓ Avoid critically important antibiotics
- ✓ Reduce the antibiotics used



➤ Avoid unnecessary use of antibiotics?

Recommendations

Danish Veterinary Administration 2018

Recommendation	Risk of resistance transfer to humans	Antibiotic class
Human use only	High risk	Colistin Cephalosporine, 3-4th gen. Fluoroquinolone
Veterinary use only after resistance testing	Moderate risk	Apramycin Gentamicin Tetracycline
First choice for vet use	Lower risk	Other approved antibiotics

Responsible antibiotic use

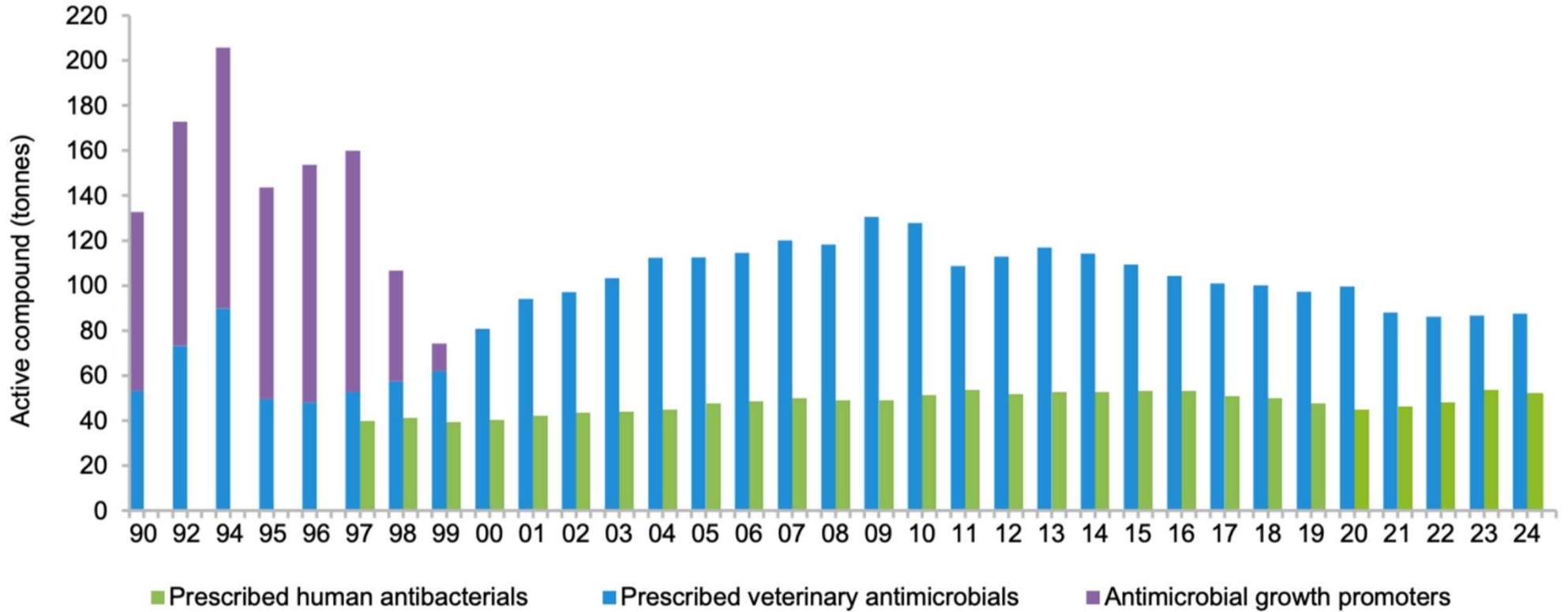


Reduce the antibiotics used



Figure 4.1 Antimicrobial consumption for humans and all animal species, tonnes of active compound, Denmark, 1990-2024

DANMAP 2024



9 months average (ADD/100 animal/day)	Finishers (30 – 120 kg)	Weaners (7 – 30 kg)	Sows (>120 kg)
2010	8	28	5.2
2018	5.2	20.2	3.8
2019	4.4	17.2	3.2
2025	3.5	13.8	3.2

DIFFERENTIATED YELLOW CARD 2016

- **Cephalosporin, fluoroquinolone, colistin : ADD x 10**
- **Tetracycline: ADD x 1.5**

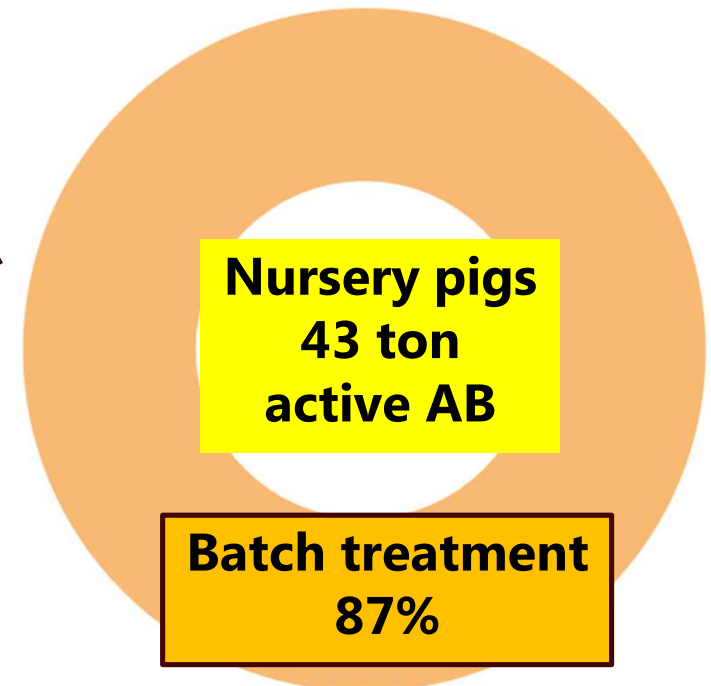
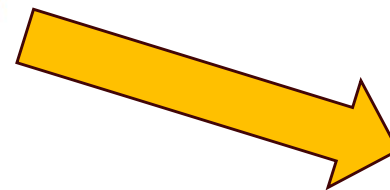
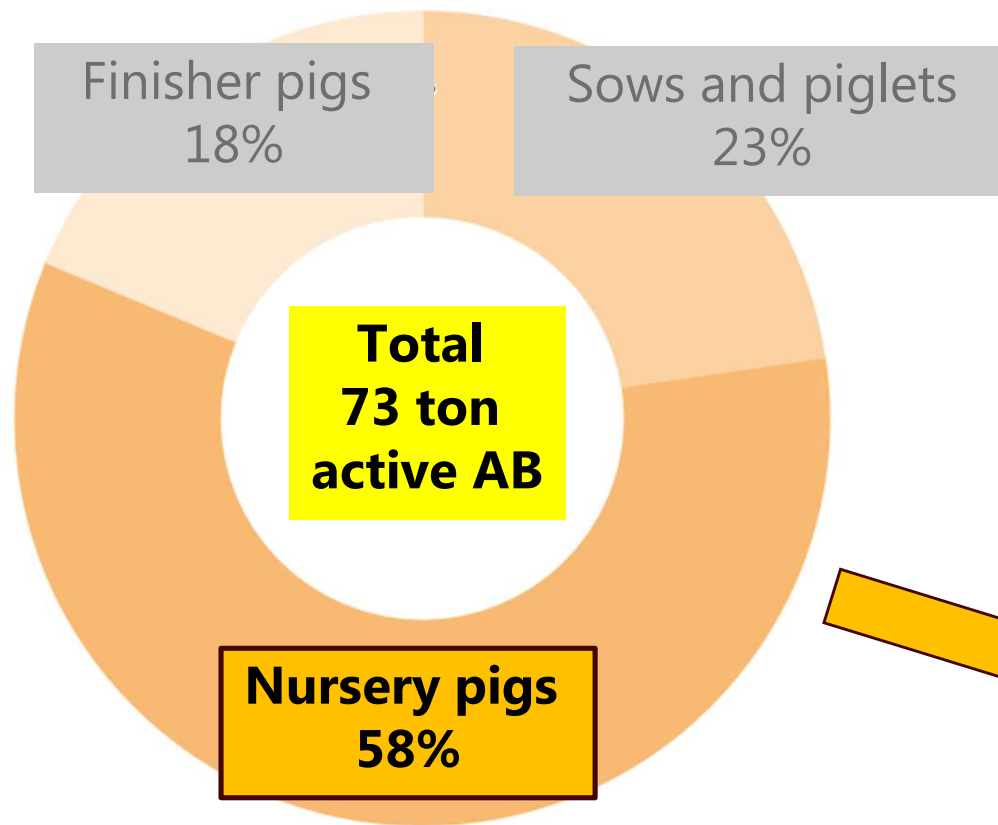
Responsible antibiotic use

- ✓ Avoid critically important antibiotics
- ✓ Reduce the antibiotics used

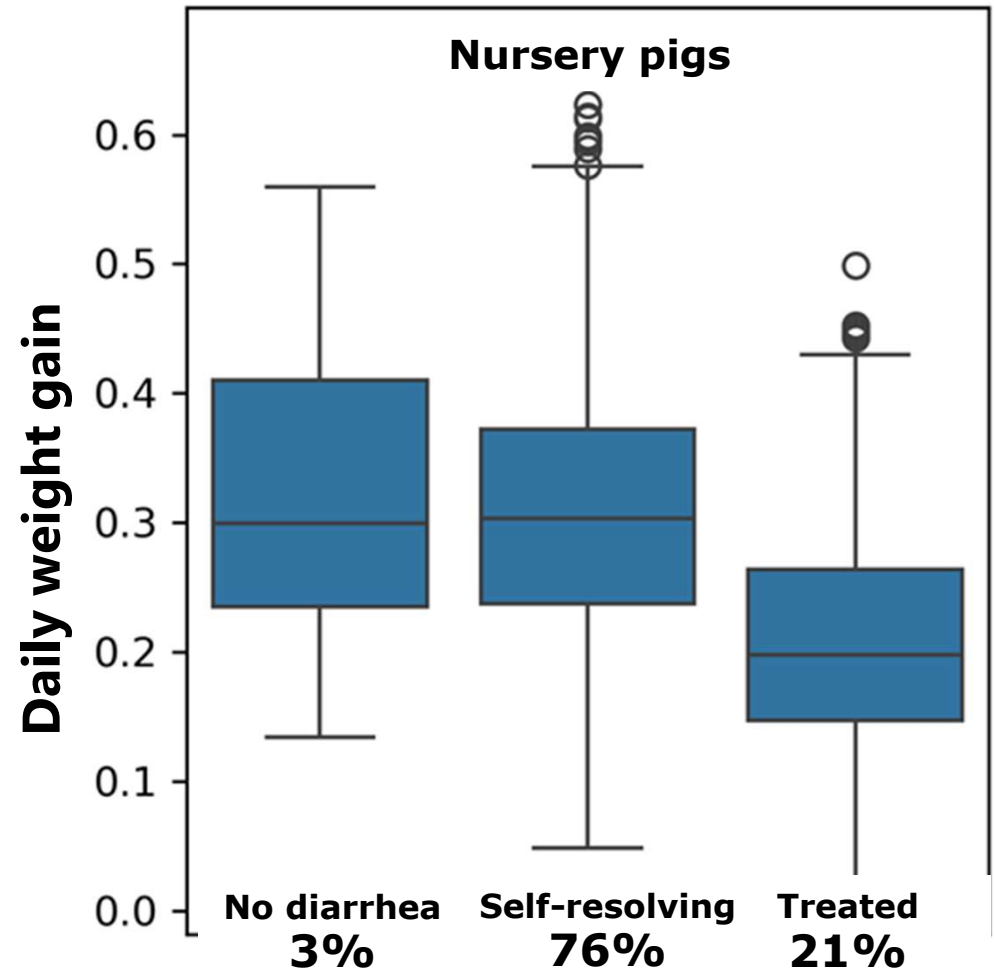


➤ Avoid unnecessary use of antibiotics?

Total AB consumption for pigs - Vetstat 2024



Daily weight gain according to diarrhea status (1.861 pigs)

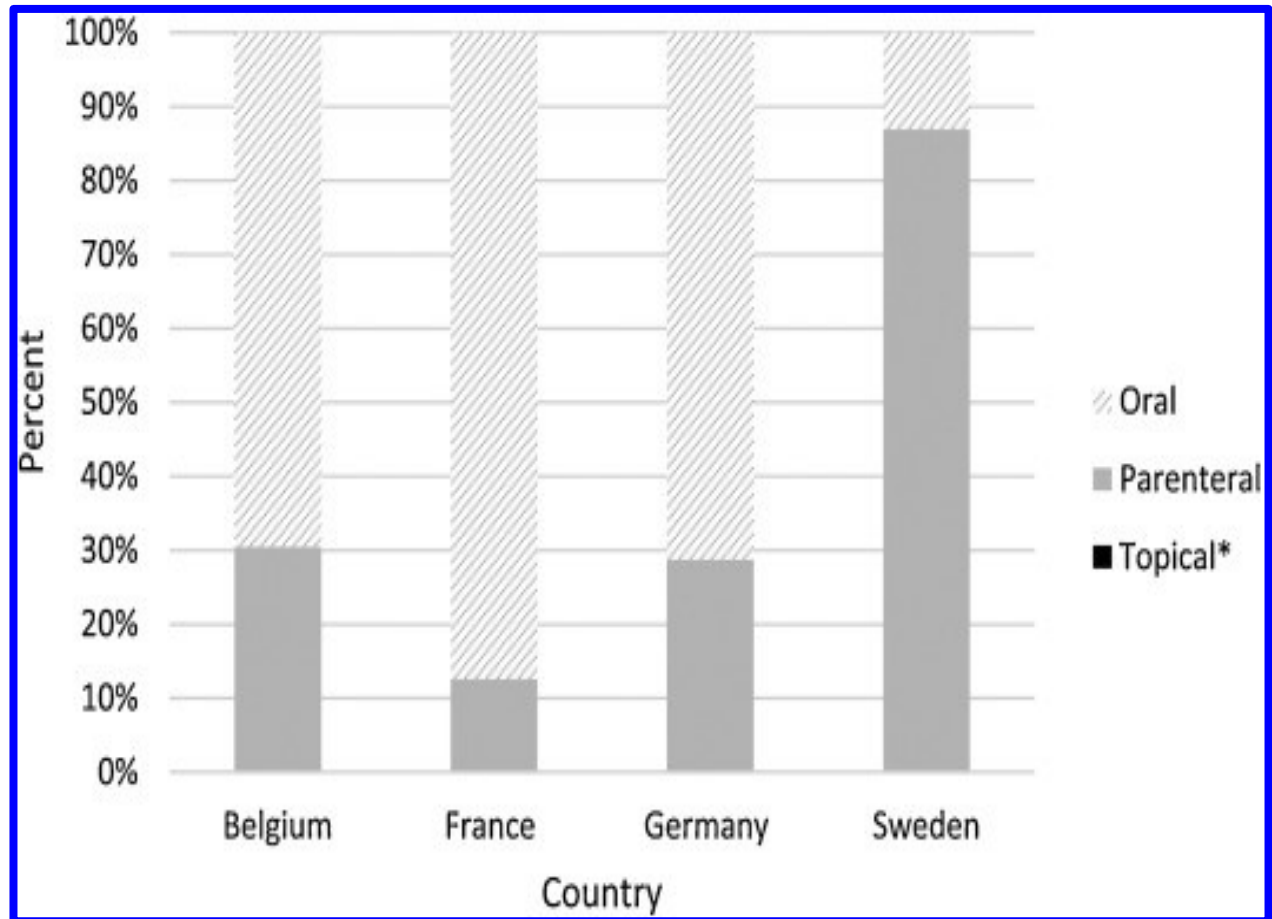


76 % reduction of antibiotic use compared to batch treatment

Single animal treatment

- ✓ No "over-treatment"
- ✓ Precise dosing

- Subclinical cases/outbreaks may be overlooked
- Takes time
- Skilled labor needed



Sjölund et al 2016

**Can pigs be raised without
antibiotic treatments?**

Raised without antibiotics



Pure Porc production (2015-23)

- **No antibiotics from birth to slaughter**
- **Ear-tagged at birth – 80% at slaughter**
- **Farmers extra bonus \approx 10%**
- **Peak number of slaughtering's 350.000/y (export)**
 - 70 % EU (Germany, Italy)
 - 30 % US
- **149 "selected" herds enrolled**



Health management

- **Existing facilities**
- **Good husbandry practice**
- **Allowed**
 - **Necessary AB treatments = lost bonus**
 - **Vaccination**
 - **Pain killers**
 - **Anti-parasitics**
 - **Zink Oxide (3000 ppm)**
 - **Sow antibiotic treatment**



Challenges in RWA herds

- Biggest challenge of becoming RWA producer?
 1. Increase in prevalence of umbilical hernia
 2. Diarrhoea in piglets or nursery pigs
 3. "When do we initiate AM treatment, and when can we wait?"
- What was the prevalence of umbilical hernia before and after joining the RWA program?
 - Before: 1.9 %
 - After: 5.1 %
- Biggest economical challenge?
 - Extra work time per piglet
 - Higher quality feed
 - Vaccines

Conclusions on Pigs raised without antibiotics (RWA)

- Consumer driven
- Required devoted pig producers and abattoirs
- Had a relatively small extra cost
- Individual animal focus
- New tools for health management
- **Production standard for the future?**



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