DANMAP seminar

Current challenges in the antibiotic treatment of humans and animals - perspectives from the daily work as swine veterinarian

18. november 2024

Who am I?

Veterinarian in 1985

Worked in practise until 2006

17 years in MSD Animal Health (Former Scheering-Plough, Intervet) until 2022

Specialization as pig specialist, Diplomate ECPHM

Currently working as independent adviser, related to Ø-VET pig practise

Member of the board of Veterinary Medical Association, as chairperson for the pig group of veterinarians

Member of Det Veterinærmedicinske Råd

What are the challenges?

- Low use of antibiotics – in general
- High use of antibiotics - compared to Northern neighbours like Sweden, Norway and Finland

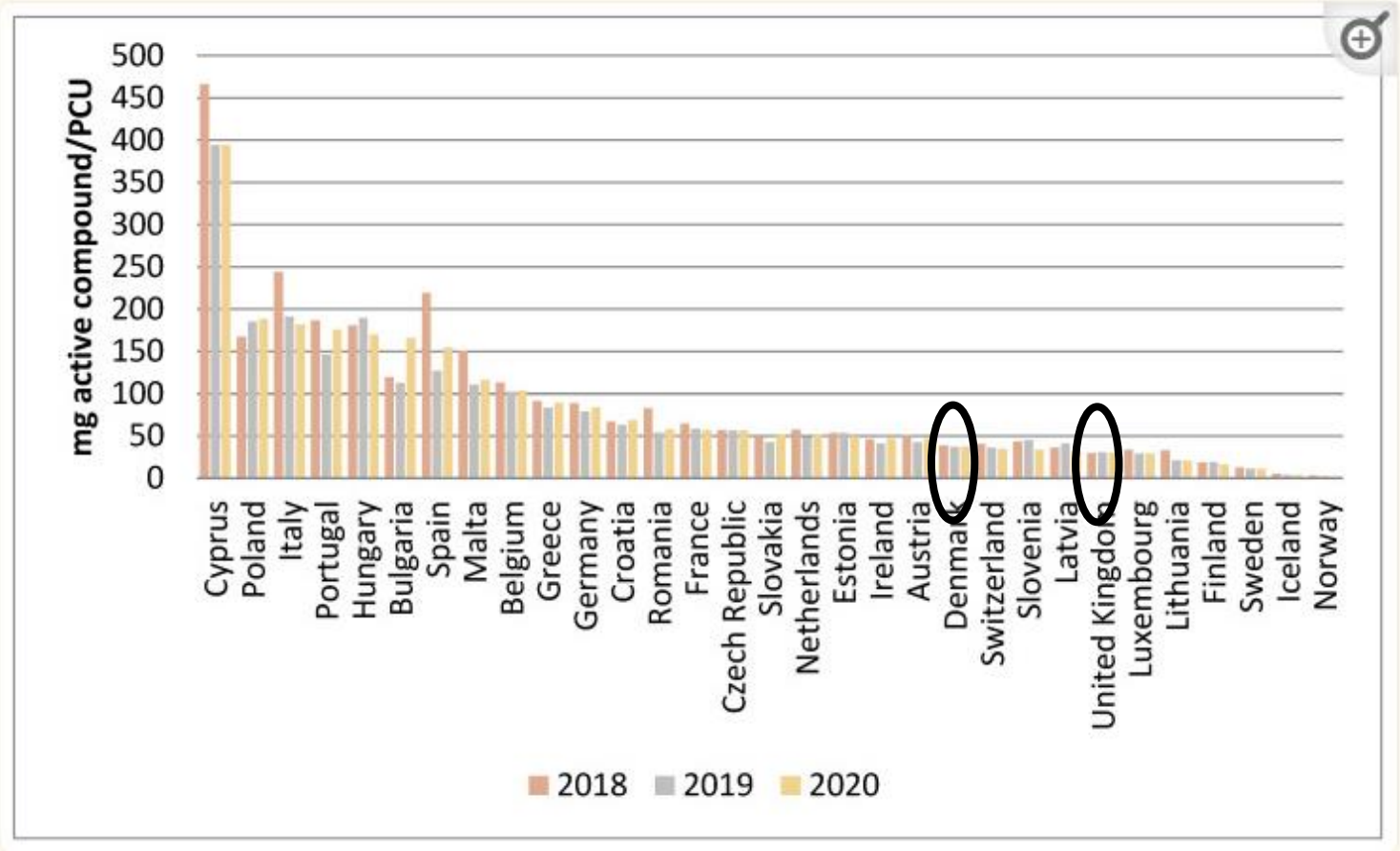
- A UK report (Georgine Crayford 2018) highlights the importance of recording as per Vetstat in order to compare countries

UK pig industry reduces antibiotic use by 17%

Thursday, 23 June 2022

New figures show the amount of antibiotic used to treat pigs on UK farms in 2021 fell by 17%, bringing the total reduction since 2015 to 69%.

We are low! – despite we have many pigs!



A Nuffield Farming Scholarships Trust Report

Award sponsored by

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Reducing antibiotic use in pig production – is there a need for systemic change?

Georgina Crayford

Date report submitted

July 2018

NUFFIELD UK

UK study

DDD

Table 1: Pig production figures and antibiotic use levels in the countries visited during the Scholarship

	National breeding herd	Annual pig slaughterings	Antibiotic use (mg/kg)	Notes on antibiotic use figure
UK	409,000[i]	9,110,000[ii]	131 (pigs)	On-farm antibiotic use figure for 201 collected into the industry's electron medicine book (eMB)[iii]
Finland	116,000[iv]	2,145,000[v]	18.6 (all livestock)	2016 antibiotic sales figure for all livestock [vi]
Sweden	141,000[iv]	2,551,000[v]	12.7 (pigs)	2016 antibiotic sales figure for pigs [vii]
Denmark	1,237,000[iv]	19,108,000[v]	44.3 (pigs)	Estimation calculated using reported tonnage used in pigs in 2016[viii]
USA	6,200,000[ix]	118,219,800[x]	380 (pigs)	Estimation for Smithfield Foods pork supply chain based on antibiotic use figure for 2016 [xi]
Canada	1,253,000[xii]	21,424,000[xiii]	400 (pigs)	Estimation based on a pilot project involving 40 pig farms in Ontario
Australia	267,000[xiv]	4,850,000[xiv]	?	No (recent) data available for sales o usage of antibiotics in livestock

Some differences from Sweden to Denmark

Production	DK	SE
Weaning age	> 21 days	> 28 days (10 % below)
Weaning practise	Mixing of pigs	Often litterwise
Finishers place	0,65 m2	1,0 m2
Weaner place	0,15 – 0,3 m2	0,37 m2
Birth to - number of piglets	19,6	16,6
Requirements of straw	Only if slats allow it	Required
McRebel* procedures implemented * See next slide	No – in general	Yes – in general
Sows at farrowing	Fixed – in general	Loose
Production price 2022 – Interpig results	DKK 12,88/kg	DKK 17,28/kg
Selfsufficiency	Around 3 - 6	Around 0,7
Use of antibiotics (Georgina Crayford 2018)	44,3 mg/kg	12,7 mg/kg

McRebel

1. *Stop crossfostering of piglets* between litters for resizing or saving sick pigs, fall-behinds, and runts (Image 2).
2. *Cross-fostering* piglets to equalize number of piglets per litter *only within the first 24 hours* of age.
3. Only *move piglets within farrowing rooms at birth*. Do not move sows or piglets between rooms.
4. *Stop use of nurse sows* for weak-born PRRS infected pigs, fall-behinds and runts.
5. Minimize handling of piglets, especially routine antibiotic or extra iron injections.
6. Evaluate the effect on clinical disease levels of each nonessential processing or treatment procedure for suckling and nursery pigs.
7. Immediately *destroy piglets that become very sick* and are unlikely to recover completely
8. *Hold NO pigs back*. DO NOT move fall-behind or lightweight pigs backwards to younger rooms or nurse sows.
9. *IMMEDIATELY STOP ALL FEED BACK* of weakborn or aborted/stillborn fetuses.
10. *Nursery pigs should be moved STRICTLY ALL IN-ALL OUT*. Leave 2-3 days clean-up and disinfectant time between groups.
11. *Nursery may be loaded ALL IN* by early weaning a few of the oldest, best doing litters from the next oldest farrowing rooms.

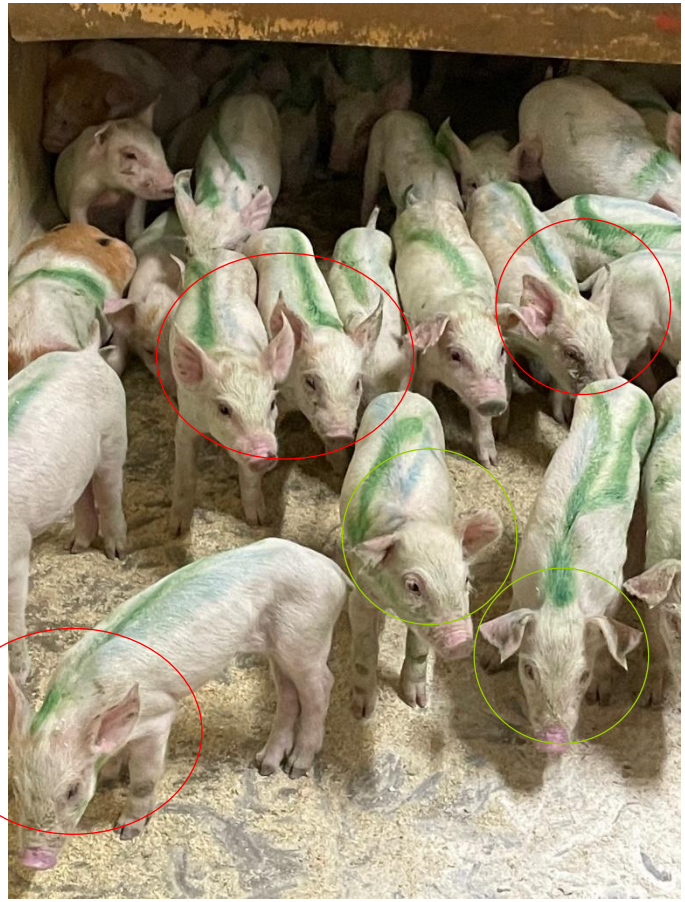
What are the main problems for DK pigs?

Many pigs born

Many pigs born too small

High value of a 30 kg pig in ie. Germany

=> High number of piglets in DK farms and break of McRebel

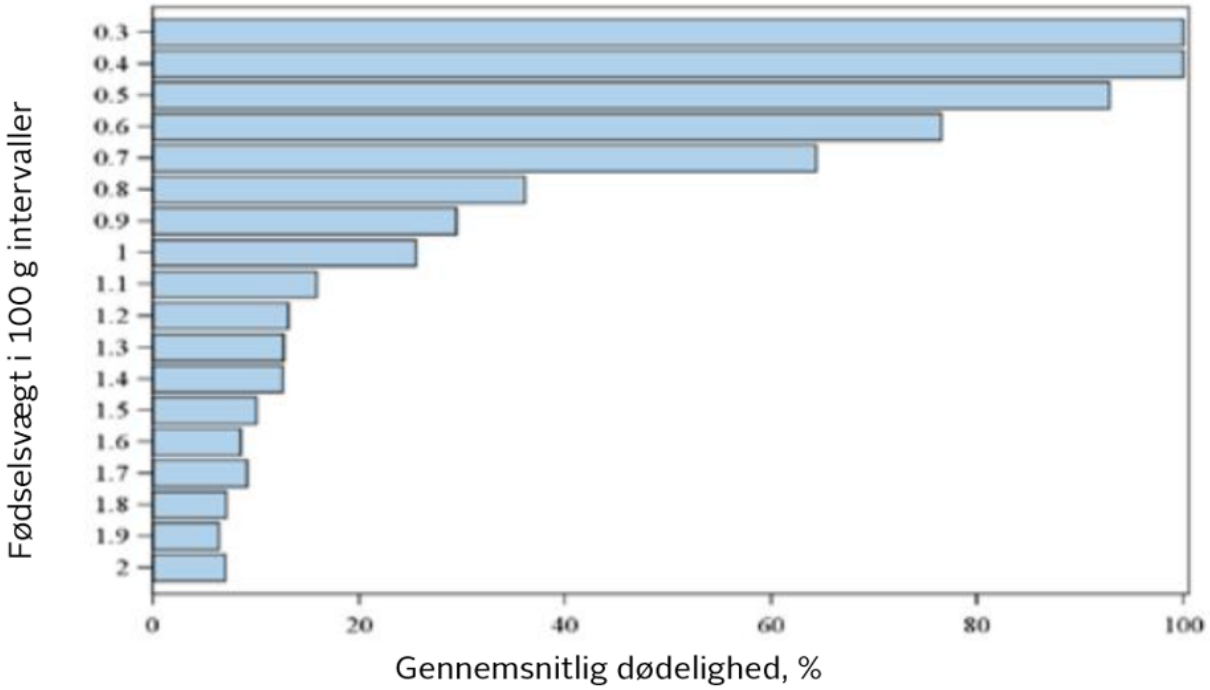


Breeding for large littersize

- Good for the climate!
- Good for the efficiency = income for farmer

- Bad for survival
- Bad for antibiotic consumption

Figur 1 - Fødselsvægt og dødelighed i farestald



L&F: MEDDELELSE NR.1052, 2015

IUGR pigs increased as numbers increase

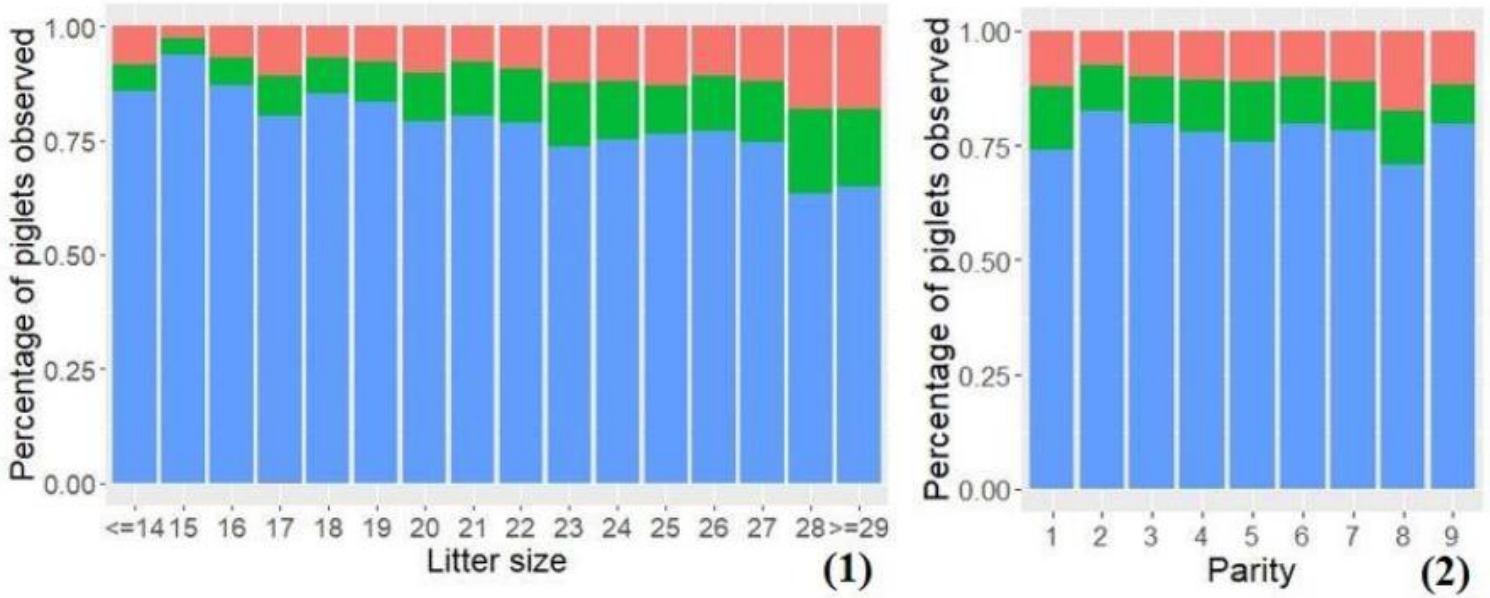


Figure 3.3.E. Percentage of normal (blue), mild IUGR (mIUGR (green)) and severe IUGR (sIUGR (red)) piglets with **(1)** increasing litter size and **(2)** of different parities.

Master Thesis in Animal Science

Ida Bahnsen (nzg184) & Kristina Vesterager Riddersholm (lnm822)

Supervisor: Charlotte Amdi Williams, University of Copenhagen

Co-supervisor: Thomas Sønderby Bruun, SEGES Danish Pig Research Centre

Submitted on: 15th of July 2020

Housing of the pig – number of pigs

Number of farms
… and we still have around 1 mio sows in Denmark!

	1992	2002	2012	2022
Number of farms with pigs	57,153	11,747	4,181	2,399
Of which:				
With pigs and sows	21,722	5,165	1,617	1,007
With pigs only	16,854	4,873	1,790	975
With sows only	18,577	1,238	445	291
Neither "pigs or sows" [1]	0	471	329	125

[1] Danmarks Statistik defines a slaughter pig as one of 50 kg an upwards. Farms with pigs less than 50 kg and without sows are therefore included as "Neither pigs or sows."
Source: Danmarks Statistik

Distribution of farms

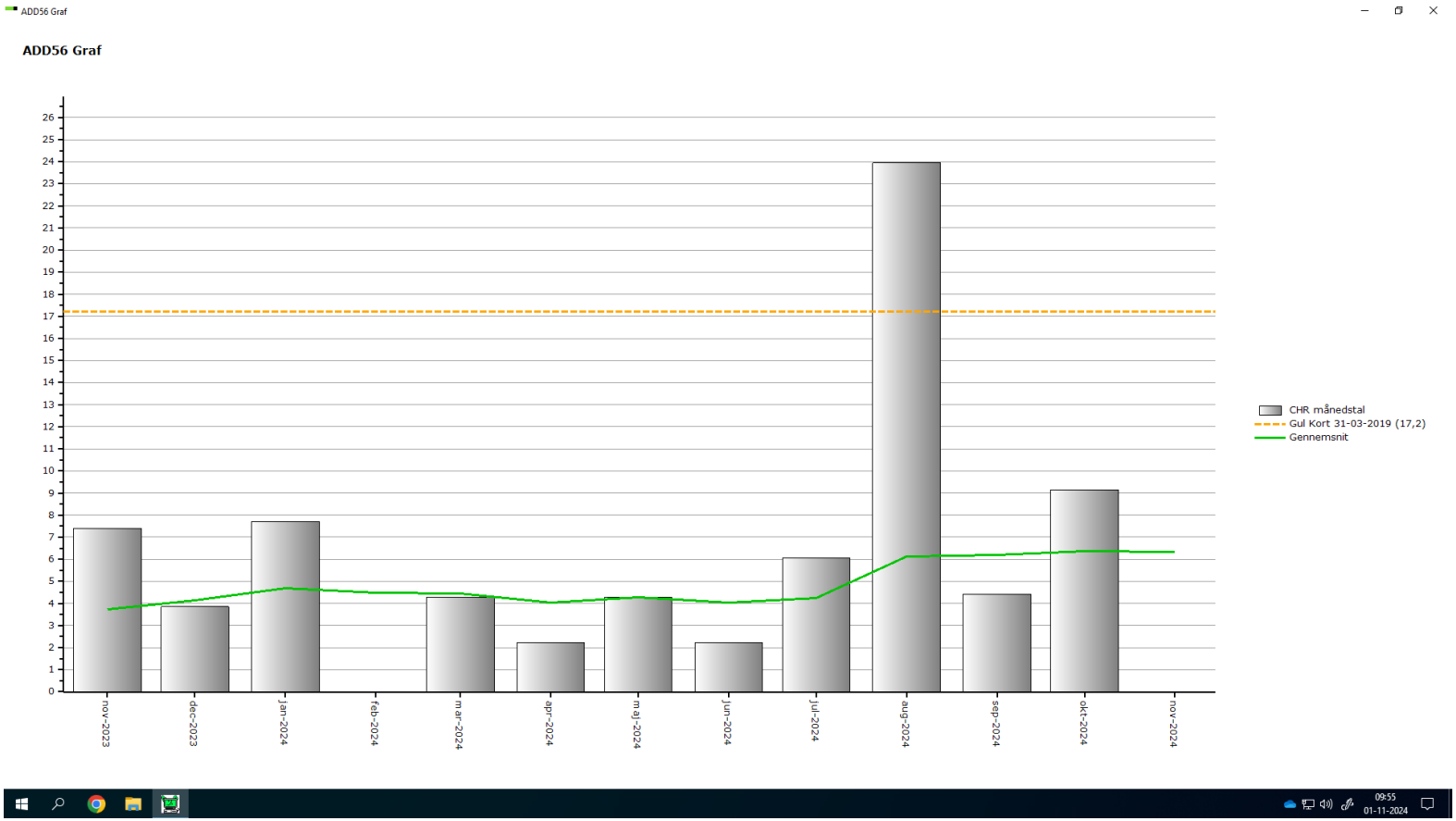
Pigs		Number of farms		Number of pigs	
%		2021	2022	2021	2022
1 -	249 head	8.4	13.5	0.1	0.1
250 -	499 head	4.5	4.0	0.3	0.3
500 -	999 head	8.3	5.9	1.2	0.9
1,000 -	1,999 head	14.8	13.2	4.2	3.8
2,000 -	2,999 head	11.0	11.1	5.3	5.3
3,000 -	4,999 head	15.7	14.5	12.2	11.0
5,000 -	7,499 head	15.2	15.4	18.2	18.4
7,500 -	9,999 head	8.0	7.8	13.5	13.0
10,000 -	14,999 head	8.0	7.8	18.9	18.4
15,000 -	19,999 head	3.3	3.6	11.1	11.9
20,000 -	24,999 head	1.1	1.5	4.9	6.5
25,000 -		1.5	1.5	10.0	10.5
Total		**100**	**100**	**100**	**100**

Sows		Number of farms		Number of sows	
%		2021	2022	2021	2022
1 -	4 head	4.0	5.3	0.0	0.0
5 -	9 head	1.9	1.2	0.0	0.0
10 -	24 head	2.1	0.9	0.0	0.0
25 -	74 head	1.4	2.5	0.1	0.2
75 -	199 head	7.7	8.0	1.4	1.5
200 -	499 head	23.7	23.0	11.5	10.8
500 -	749 head	23.3	23.1	19.4	19.2
750 -	999 head	12.3	11.1	13.9	12.6
1,000 -	1,499 head	13.1	13.7	21.0	21.9
1,500 -	1,999 head	5.6	5.6	13.0	12.8
2,000 -	2,999 head	3.2	3.6	10.0	11.4
3,000 -		1.8	1.9	9.6	9.6
Total		**100**	**100**	**100**	**100**

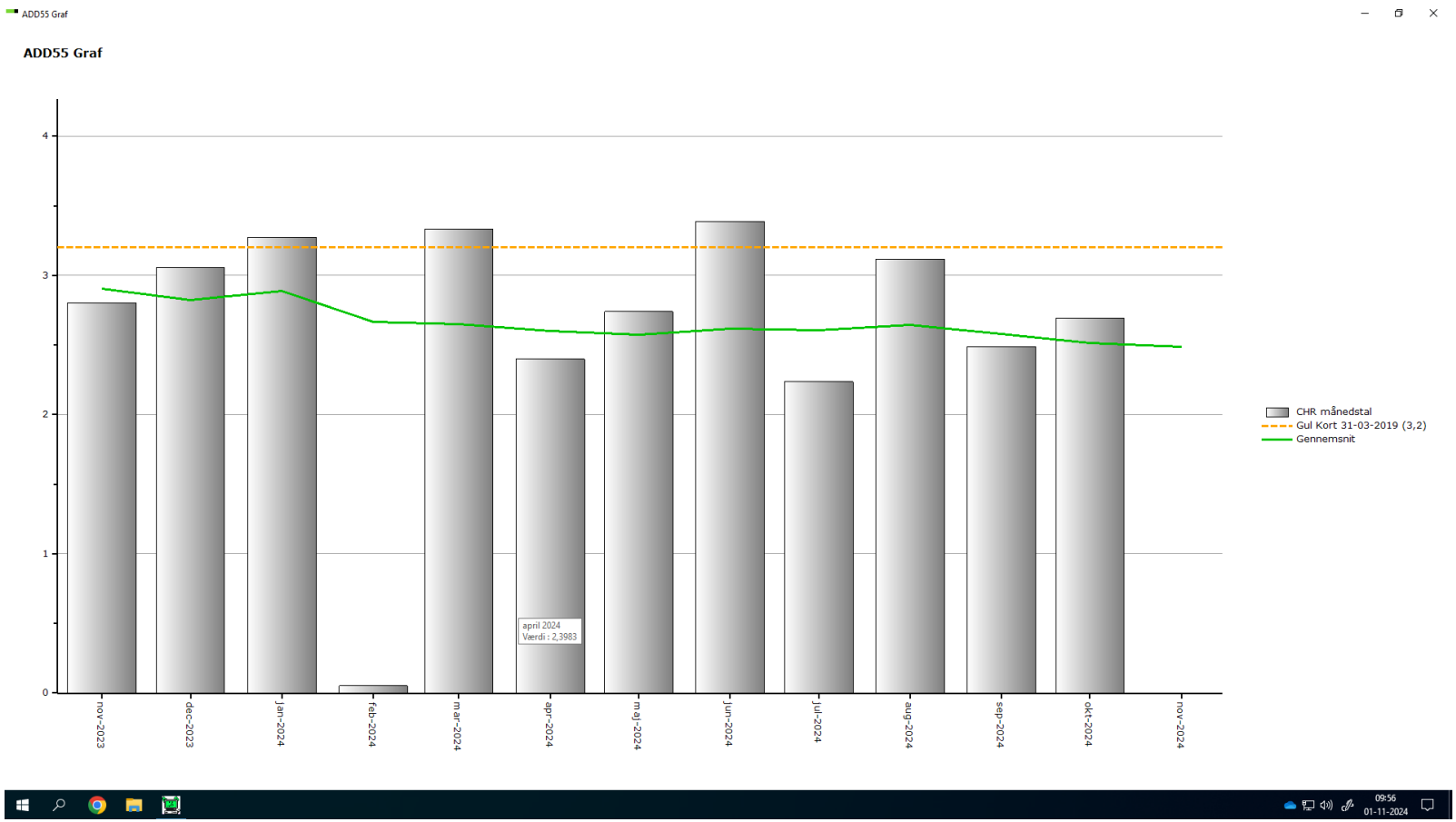
Source: Danmarks Statistik

	Curofen	1,00	kg	25	26,00	S
	Denagard® Vet inj. 200m (1/10)	100,00	ml	0	1500,00	Fr
	Denagard® Vet inj. 200m (1/10)	100,00	ml	0	900,00	Pa
	Denagard® Vet inj. 200m (1/10)	100,00	ml	0	3000,00	S
	Denagard® Vet inj. 200m (1/10)	100,00	ml	0	1500,00	Sp
	ECX - Entericolix vet.	25,00	ds.	0	0,00	S
	Espacox, oral suspension 50 mg	1000,00	ml	4	5000,00	Pa
	Flunixin Vet. (1/4) (1/4)	100,00	ml	10	2800,00	Pa
	Flunixin Vet. (1/4) (1/4)	100,00	ml	10	4000,00	Fr
	Ingelvac® Circoflex	50,00	ds.	0	0,00	Pa
	Kelaflor inj. 300 mg/ml	100,00	ml	6	900,00	Fr
	Loxicom® 20 mg/ml	100,00	ml	0	7500,00	Sp
	Metacam® inj. 20 mg/ml (1/12)	100,00	ml	0	500,00	S
	Noromylin Vet. (1/12)	100,00	ml	0	0,00	Sp
	Noromylin Vet. (1/12)	100,00	ml	0	0,00	S
	Oxytobel inj.væske (1/12)	50,00	ml	0	75,00	S
	Porcilis Lawsonia ID Vet.	100,00	ds.	10	0,00	Pa
	Porcilis Lawsonia ID Vet.	50,00	ds.	0	0,00	Pa
	Porcilis PCV ID	100,00	ds.	10	0,00	Pa
	Porcilis PCV ID	50,00	ds.	0	0,00	Pa
	Primopen 300 mg/ml	100,00	ml	0	800,00	Fr
	Primopen 300 mg/ml	250,00	ml	0	2700,00	S
	Primopen 300 mg/ml	100,00	ml	0	500,00	Sp
	Primopen 300 mg/ml	250,00	ml	0	2500,00	S
	Procamidor Vet., 20 mg/ml, inj	100,00	ml	0	959,00	Pa
	Respiporc FLU3 injektionsvæske	50,00	ds.	0	0,00	S
	Rocovac vet	50,00	ml	0	0,00	S
	Sodilin 800mg/g, pulver til or	5000,00	g	0	0,00	Fr
	Sodilin 800mg/g, pulver til or	5000,00	g	0	0,00	S
	Streptocillin (1/5)	100,00	ml	30	5000,00	Pa
	Sultrivet	100,00	ml	0	500,00	Fr
	Sultrivet	100,00	ml	0	500,00	Pa
	Sultrivet	100,00	ml	0	350,00	Sp
	Sultrivet	100,00	ml	0	2000,00	S
	Tulissin 25 mg	100,00	ml	1	150,00	Pa
	Tulissin 25 mg	100,00	ml	2	150,00	Fr
>	Vetrimoxin® LA	100,00	ml	30	8200,00	S

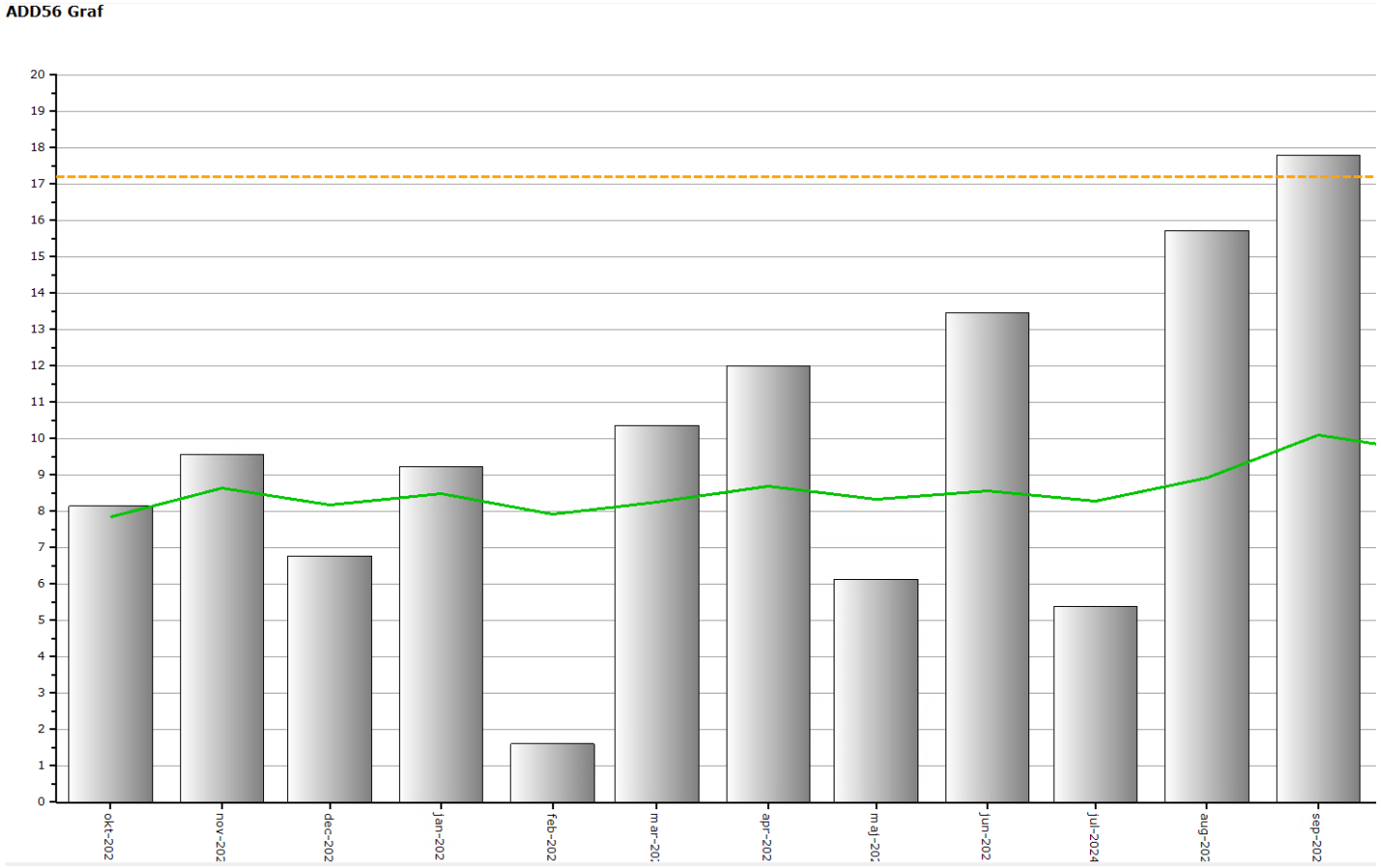
Low use in weaners



Relatively high in sows



High use in weaners



”We treat with antibiotics whenever pigs are diseased. The farmer decide the number of pigs in a farm. That is not our decision - within the Danish legislation.”

Det Veterinærmedicinske Råd's 17 advices

1. Beskrivelse af det kliniske billede i gruppen af dyr, beskrivelsen kan evt. støttes af fotooptagelser ✓
2. Dokumentation af diagnostiske undersøgelser herunder bakteriologiske undersøgelser inklusive resistensmønstre, hvor det påviste patogen gør dette praktisk muligt. Dokumentationen omfatter såvel dyrlægens egne undersøgelser som materiale undersøgt på godkendt diagnostisk laboratorium. Såfremt der foreligger opdaterede behandlingsvejledninger/antibiotikavejledninger skal disse konsulteres. ✓
3. Vurdering af nødvendigheden af flokbehandling versus muligheden for anden type af behandling ?
4. Vurdering af behandlingsrutiner herunder de anvendte beregningsmetoder for dosering af medicin i forbindelse med behandling af både enkeltdyr og dyr i flok ✓
5. Vurdering af faciliteter til flokbehandling, herunder doserings- og distributionssystemer ✓
6. Vurdering af de påtænkt anvendte antibiotika både set i forhold til bakteriologiske fund i den aktuelle besætning og set i forhold til foreliggende dokumentation af resistensforhold i Danmark, Fødevarestyrelsens vejledning om ordinering af antibiotika til svin og de enkelte produkters SPC (Summary of Products Characteristics) ✓ ?
7. Vurdering af opdræts- og produktionsplaner, herunder flytninger af dyr inden for besætningen ✓
8. Vurdering af den daglige/jævnlige monitorering af miljøet i farestier/pattegrisehuler og herunder vurdering af hygiejne og behov for yderligere varme ✓
9. Vurdering af smågrises fravænningsalder og robusthed ved fravænning, herunder en vurdering af, om der er sket tilvænning til foder i farestalden ☹
10. Konstatering af, om smågrise holdes sammen kuldvis ☹
11. Vurdering af rutiner for flytninger af dyr. Kan alt ind – alt ud drift gennemføres? ☹
12. Vurdering af generel smittebeskyttelse på besætningsniveau og afsnitsniveau herunder beskrivelse af hygiejnetiltag og -rutiner hvad angår rengøring af stier og stalde samt gødningssystemer ✓ ☹
13. Vurdering af uddannelsesniveauet hvad angår biosecurity hos ejer og ansatte ✓ ☹
14. Vurdering af ventilation samt vurdering af træk og andre ventilationsrelaterede parametre ✓
15. Vurdering af fodersammensætning og fodringsrutiner, samt hygiejne ✓
16. Vurdering af vandingssystemet med hensyn til hygiejne og funktionalitet ✓
17. Vurdering af besætningens udfasningsplan for anvendelse af lægemiddelzink ✓

In general …

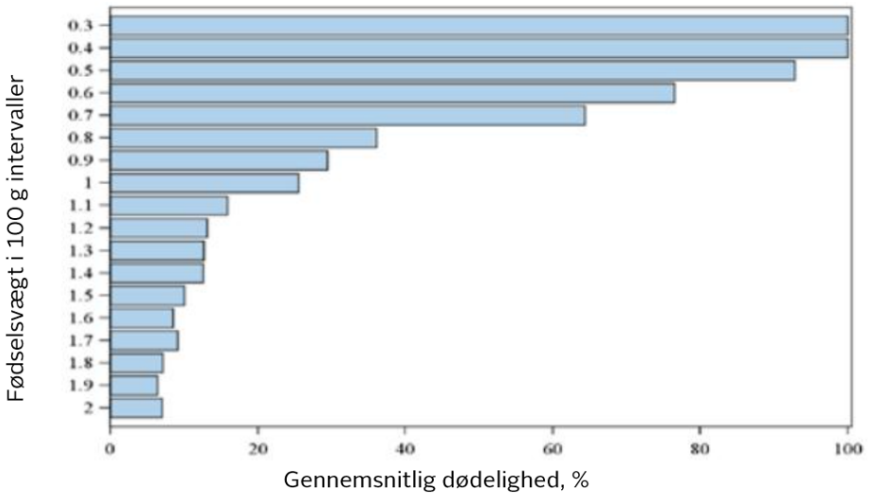
Too many old farms
Too little space for piglets, weaners, finishers and sows
Too little focus on All-in - All-out
Too small and young when weaned
Too much Influenza in many farms

… and still fulfilling the DK legislation

1. Allowed to wean 6,6/m2 piglets up till 10 kgs and then distribute them up til 20 kg at 5/m2 and redistribute them until 30 kg where there is spacedemands of 3,3 pigs/m2 – ideally follow the dutch strategy or even better the Swedish
2. 0,65 m2 per finisher pig – in Holland 0,8 and Spain and Germany 0.75 m2
3. Dynamic sowgroups are a challenge due to fighting – more space and demand for straw
4. Too many piglets born – what should we do?

Can we do this?

Figur 1 - Fødselsvægt og dødelighed i farestald



Kill all piglets born below 800 (?) grams at birth => reduce # fostersows

- Ethically considerations!
- NO animal welfare considerations!

Wean > 28 days – and don't take out piglets = 3,3 piglets/m2
- AT WEANING

Give more space for finishers

Give more space for – at least – dynamic groups of sows

Questions?