

MANAGEMENT MEASURES TO IMPROVE ANIMAL HEALTH AND REDUCE ANTIMICROBIAL CONSUMPTION

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Introduction

- Currently globally great concern regarding the spread of antimicrobial resistance
- Evidence that this is due to the use of antimicrobials in both, humans and animals
- Objective to reduce use of antimicrobials by prudent/responsible use, as obviously needed for treatment in certain cases
- Measures taken during last 10 years have not improved situation, maximum stopped increase, but MRSA etc. ...
- EU (EMA, EFSA, ECDC) have issued further guidance, warnings on SPCs, recommendations for training of farmers/vets etc., in depth assessments by EMA/EFSA

Introduction

- No licensing of new antimicrobial classes in animal health since 20 years, although some new in human health
- Ever increasing requirements, aiming at limiting/avoiding new applications and products
- Veterinary pharmacologists are involved to improve treatments (e.g. correct dose, schedule etc.), microbiologists in better diagnostics, but vets/patients?
- However, on the use of antimicrobials, no change for both humans and animals: rather growing per animal, thereby even more AMR issues
- Do we have the right approach? Where is faster success more likely?

Prevention

- Definition: avoid, not allow to happen (latin source: „praevenire“)
 - This means first of all: keep pathogen non-active
 - Avoid diseases: prevent pathogens to cause disease
 - „eradication“
 - „vaccination“
 - But: metaphylactic use of antimicrobials (this is not true prevention), although preventing disease in some animals
 - Veterinarians mainly concentrate on the „ill“ animal

Overall objective: Avoid disease = avoid use of AM

Prevention

- To avoid disease, there are two ways:
 - keep the pathogen away from the animal:
 - Aim for farms, being free of specific pathogens (e.g. IBR, BVD, FMD)
 - Avoid introduction of pathogens (reduce transport, closed farms, quarantine, etc.)
 - Avoid horizontal transfer within farms (all-in/all-out, hygiene)
 - allow the animal to be able to cope with the pathogen (e.g. improve immune system):
 - Acceptable stocking density (e.g. stress related diseases)
 - Climatic conditions (e.g. Respiratory disease)
 - High quality feed (e.g. Clostridia)
 - Optimal technical and housing equipment (e.g. footrot, mastitis)
 - vaccination





Broiler Production Transport throughout EU and globally

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Why increased use of AM?

- **More Animals and Larger Farms**
 - Swine and Dairy
 - Cattle, Sheep
 - Poultry
- **Ever more specialisation per farm: ↑ transport/stress**
- **More and new diseases - examples:**
 - Swine: PCV2, PRRSV, Lawsonia, Strep. suis, H. parasuis
 - Poultry: Influenza, Dysbacteriosis (necrotic enteritis), E. coli
 - Dairy: More E. coli and Strep. uberis, less „Strep. agalactiae“
- **Major contributors by claim:**
 - Respiratory Disease: SRD, BRD, Colibacillosis in chicken
 - Enteric Disease: E. coli, Brachyspira, Lawsonia, Clostridia
 - Mastitis/Metritis (cow/sow): Dairy: low cell counts

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Why increased use of AM?

- With implementation of prudent use guidelines, the number of sick animals did not change! But changed due to ban of AM feed additives and emerging diseases it did:
 Swine: Lawsonia, Brachyspira, Clostridia, more Strep. suis, H. parasuis,
 Dairy: Sc. uberis, E. coli, Fusobacterium necrophorum
 Poultry: Clostridium perfringens
- Transport/Trade of animals has increased: ‚Crowding‘ is stressor, also introduction of pathogens by trade
- Specialisation of farming has increased: even more transport/crowding of animals of different origin, more stress by increased specialisation and ever higher productivity objectives-however, needed to produce protein

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Why increased use of AM?

Enormous Economic Pressure

- Example: Large Integrater introduces new pricing systems to poultry farmers (GER)*:
 - Implementation of „consultation fee“: 20€/m²
 - At same time reduction of prices for well-known antimicrobials by 45 % (90€ to 50€) (by vets)
 - Argument: same price better value
- Reaction of Farmer:
 - Used price to find vet, who sells product at reduced price, and also avoid „consultation fee“
 - By this significant cost reduction, but increase use of antimicrobials at low price *(anonymus, 2009)

Why increased use of AM?

Enormous Economic Pressure

- Antimicrobials clearly compete with other means (improving housing etc.)
- The cheaper - the more use
 - Launch of Generic Fluoroquinolones increase use of Fluoroquinolones in poultry (Chauvin, EAVPT 2009)
 - In both, human and animal health, no relevant decrease of use of antimicrobials over last 10 years
 - High number of „cheap“ generic products (FQ) currently introduced to EU markets, cephalosporines to come soon

Why increased use of AM?

Pets

- Pets replacing kids, owners request immediate cure for pets, immediately AM
- Similar to HA-problems in human health, increasing problems in referral clinics, but also present in community (Nienhoff, Thesis Hannover 09)
- Use of non-licensed AM-products: Increased use in specialised clinics (Huettig, 2009)
- Lack of strategy to handle MRSA problems
- Do we have strategy how to handle cases where both are infected: patient and owner?

Decisions are taken by management. What can be achieved?

An example of a swine farm

Data provided by DVM H.-U. Lehmann, GER

Example Swine Farm*

- Fattening unit in Northeast Germany
- 12 000 places (24 000 produced/year)
- Since 1976 in operation
- Since 1990 third owner
- Veterinarian took over in 2006
- At that time
 - one supplier of piglets
 - significant health problems
 - weekly vet visit applying various kinds of therapy, no progress

* Data provided by DVM U. Lehmann, GER

Example Swine Farm

- Mortality 9,7%
- AM Injections 1,95 / Swine
- Oral AM treatment 51 / 120 days
- Vet costs 11,30 € / Swine
- Weight gain 673 g / Day

Example Swine Farm: Needs

Integrated veterinary farm consultancy

- Knowledge of all influencing data on animal health, farm management and use diagnostics
- Analyses of all existing and relevant data
- Discussion of results with farmer
- Conclusion including implementation of agreed measures
- Control of measures and performance
- Re-analysis of Data
- ... permanent improvement

Example Swine Farm: Diagnosis

- Clinical diagnostic
 - thorough clinical observation of all groups of animals
 - in depth diagnostics including post-mortems (by pathologist, bronchio-alveolare lavage, faeces, blood samples and submission to relevant qualified laboratories)
- Construction of Stalls / Climate
 - In depth observations of the buildings for weaknesses
 - In depth control of climatic conditions
- Feeding
 - Feed composition and -hygiene, water
- Farm management
 - Work content and operation of workforce
 - Workflow, Documentation, Monitoring/Surveillance

Example Swine Farm: Action

- Immediate stop of purchase of swine from previous source
- Reconstruction of all buildings
 - thorough cleaning of all parts of all buildings (probably not done for 30 years)
 - Reconstruction of buildings/stalls
 - Implementation of animal-feeder ratio of 1:1
 - Reconstruction of ventilation
- Identify supplier of pigletes with defined SPF-Status!
 - Visit farm/farmer for future supply
 - Define health status of herd including genetics
 - Compare different suppliers and offers and decide

Example Swine Farm: Implement

- Difficult search for fatteners fulfilling criteria
 - Animal health status not compliant with expectations: free of: APP, Haemophilus parasuis, EP, Dysentheria. (Free of PIA impossible!)
- Separation of „rehabilitated/sanitated“ from „just clean“ units providing additional shower, separate pathways and 2nd loading ramp
- Feed preparation
 - Feed supply & guaranteed constitution
 - Secure and safe storage capacities (additional tanks built)
- Training of personnel (adapt to needs: from 6 to 3)
 - Implementation of a Black/White system
 - Continuous training and control of workflow

Example Swine Farm: Results

	2009	2006
• Losses	0,6 %	9,7 %
• AM Injections	0,25	1,95 / Sw
• Oral AM appl.	26 days	51 days
• Vet costs/swine	1,30 €	11,40 €
• Daily weight gain	771g	673 g



What can we learn?

- **Significant improvements can be made, if**
 - Awareness of problem
 - Willingness to change it to the better
 - Financial resources for investments
 - Attention to detail identifying the problems
 - Attractive to management
- **Improvements include a multidisciplinary approach**
 - Sources of animals including genetics
 - Housing including all aspects of long term hygiene
 - Management always considering effects on animal health
 - Feeding optimised
 - Permanent surveillance of disease and immediate action and control

Core is the Improvement of Animal Health

- Limit transport, major cause of stress causing disease
- Improve farm management, avoid overstocking, improve feed etc.
- Implement EU requirements on animal welfare/hygiene
- Support availability and use of vaccines, if needed: but, limited number of vaccines commercially acceptable
- Finance up to date housing incl. technique
 - Ventilation, light regimen, floor, bedding
- Improve control of farmers/vets regarding use of AM!

Transport: Regulation 01/2005/EC

- No transport while nursing
- Long distance transport: >8 hours
 - Permit needed, training of personnel
 - Control of transports by vet inspectors at borders
 - Permanent water access is a must
- However,
 - 3 wk piglets: 24 hours transport with access to water
 - 11 d calves: 8 hours, 1 hour break, another 8 hours

Conclusion



- Little improvement identified in reducing AM use
- The huge efforts to gather data has not yet proven to be beneficial: final value of all the efforts?
- AM resistance in humans growing, in animal health rather stable after implementation of agreed tests
- Prudent / Responsible Use Guidelines present, but it is finally decision of management: Make it attractive to change the relevant things instead of curing with AM
- No change without management
- Keep in mind: Any influence of regulators/politicians will initiate a change, but not always to the better: serious considerations should be given to a risk/benefit approach on any such method prior to implementation
- **Get the Farmers/Managers involved!**

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Thank you for your attention!



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