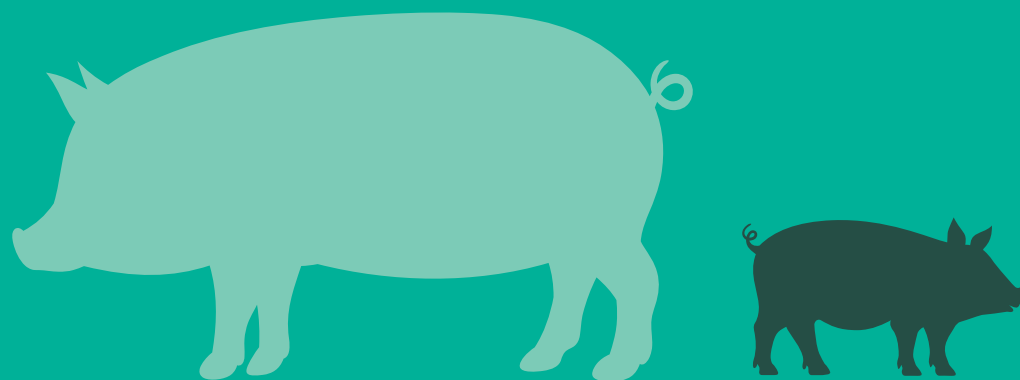




**Ministry of Environment
and Food of Denmark**
Danish Veterinary and
Food Administration

Guideline for Prescribing Antimicrobial for Pigs



April 2018

Guideline for Prescribing Antimicrobial for Pigs

Responsible Use of Antimicrobials

- 1** First and foremost use antimicrobials from group 1. The risk of developing resistance in human pathogens can be reduced by following this guideline.
- 2** Susceptibility testing should be a natural part of the veterinarian's diagnostic. If no current susceptibility data is available use data from the diagnostic laboratories.
- 3** Effective treatment must be ensured, when prescribing antimicrobials.
- 4** Prudent use of antimicrobials must not adversely affect animal welfare.

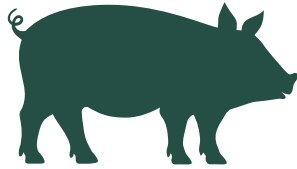
This guideline addresses all swine practicing veterinarians. This “The guideline for prescribing antimicrobials for pigs” supersedes the previous “Evidence Based Treatment Guideline for Pigs” from 2010. This guideline will again be updated when relevant information is available.

In Denmark antimicrobials are prescription only medicines, hence the veterinarian must assess whether antimicrobials are necessary. This guideline does not change the veterinarians prescription options.

The use of antimicrobials can lead to selection for antimicrobial resistance and poses a risk of developing resistant bacteria in animals. Such resistance could be transferred to human pathogens and result in treatment failure. Therefore – prudent use of antimicrobials is crucial. The aim of this guideline is to inform on the reduction of risk of transmitting resistant bacteria from animals to humans.

The Danish Veterinary and Food Administration Recommendations	Antimicrobial
GROUP 1 First line antimicrobials. To be used when a veterinarian has determined that an antimicrobial treatment is necessary	<ul style="list-style-type: none"> • Florphenicol • Lincomycin • Macrolides (e.g. tylosin, tylvalosin, tilmicosin, tildipirosin, tulathromycin, gamithromycin) • Neomycin • Penicillins, narrow-spectrum (e.g. benzylpenicillin, benethaminpenicillin, phenoxymethylpenicillin) • Penicillins, broad-spectrum (e.g. amoxycillin, ampicillin possibly with clavulanic acid) • Pleuromutilins (e.g. tiamulin, valnemulin) • Sulfonamides (e.g. sulfadizine, sulfadimidine, sulfadoxine possibly in combination with trimethoprim) • Spectinomycin • Streptomycin
GROUP 2 Alternative antimicrobials when first line antimicrobials are not effective	<ul style="list-style-type: none"> • Apramycin • Gentamicin • Tetracycline (e.g. chlortetracycline, oxytetracycline, doxycycline)
GROUP 3 These antimicrobials should not be used in pigs	<ul style="list-style-type: none"> • 3rd and 4th generation cephalosporins (e.g. ceftiofur, cefquinome) • Colistin • Fluoroquinolones (e.g. enrofloxacin)





An Example of Choice of Treatment for Diarrhoea in Weaner Pigs

In Denmark diarrhoea in weaner pigs is mainly caused by three types of bacteria

- E. coli with F4 and F18 fimbrial types
- Lawsonia intracellularis
- Brachyspira pilosicoli

In mixed infections involving E. coli and L. intracellularis or B. pilosicoli there is no single antimicrobial that works on all three bacteria. The sensitivity patterns are shown below.

When ever possible, the optimal treatment for this type of infection should be based on a relevant bacteriological diagnosis.

By comparing the clinical symptoms, the age of the pigs and the laboratory results, the choice of treatment should be aimed at the bacteria with most influence.

Examples:

- If the lab result shows only E. coli, the infection should be treated with for example neomycin as E. coli is typically susceptible to this antimicrobial. Neomycin is a Group 1 antimicrobial.
- If the sensitivity testing shows that this strain of E. coli only responds to apramycin or tetracycline from Group 2, one of these should be used for treatment.



Sensitivity of Important Intestinal Bacteria to Different Antimicrobials* First choice antimicrobials are highlighted in bold green.

Porcine intestinal bacteria	Sensitive (>75%)	Intermediate sensitivity	Less sensitive/resistant
L. intracellularis	Tiamulin Valnemulin	Tylosin Tylvalosin Tetracyklin	Lincomycin
B. pilosicoli	Tiamulin Tylvalosin Valnemulin Tetracycline		Tylosin
E. coli **	Amoxicillin/ clavulanic acid Florfenicol Neomycin Apramycin Colistin Gentamicin	Ampicillin Spectinomycin TMP-sulfa Streptomycin Tetracycline	

* Data from sensitivity testing of pathogenic bacteria in pig in Denmark can be found on the homepage of Danish Technical University

** It is recommended that E. coli (F4 and F18) is examined for resistance for optimal treatment outcome



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