Center for environmental solutions

Minsk, Belarus

Challenges with veterinary pharmaceuticals

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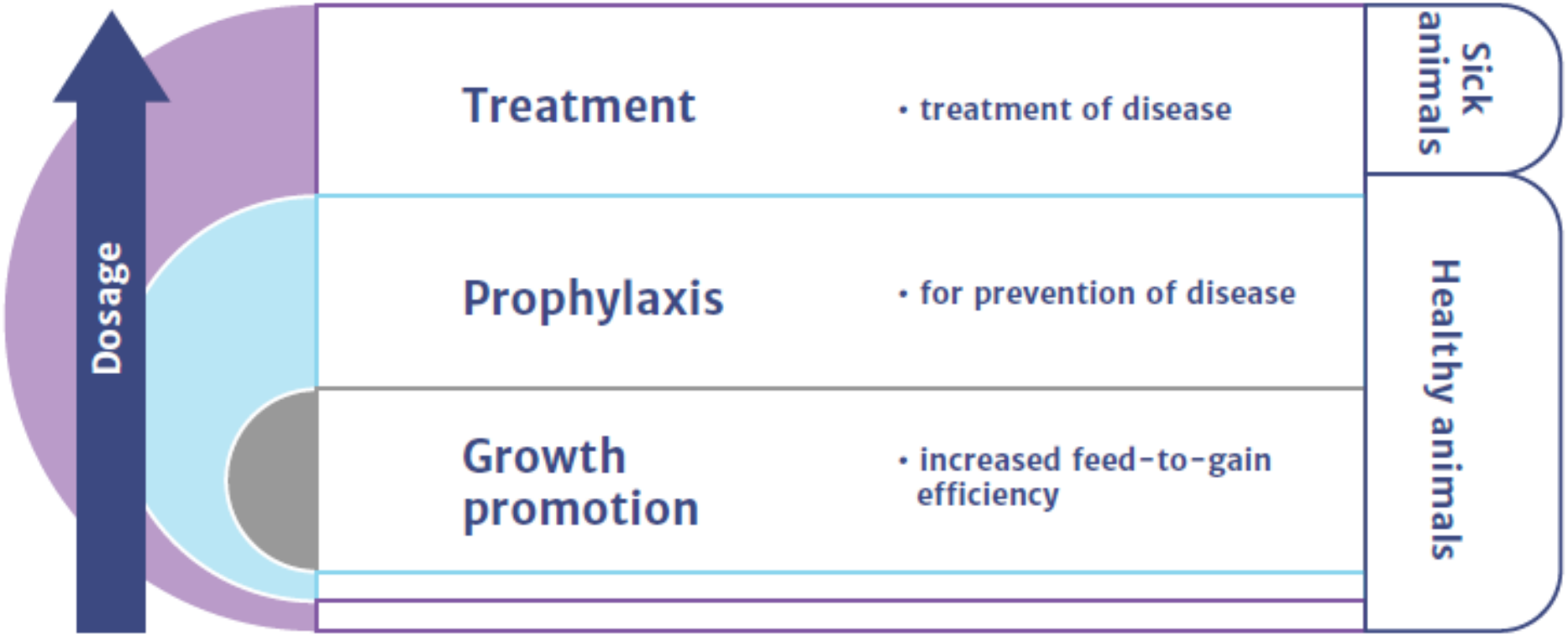
Therapeutic groups of pharmaceuticals	The most used or dangerous representatives	Special conditions
Antiparasitic agents	Ivermectin	
Agents acting on the reproductive system	Norgestomet	For therapeutic and zootechnical purposes only
Anti-infectious agents/Antibiotics	Amoxicillin, Ampicillin, Tetracyclines, **Macrolides**, Sulfonamides, Penicillin	Many of them don`t for use in animals from which milk or eggs are produced for human consumption
Agents acting on the nervous system / Agents acting on the central nervous system	Carazolol, Clenbuterol	
Corticoides / Glucocorticoides / hormones	**17β-O estradiol,** Prednisolone, Metilprednisolone	17β-O estradiol for therapeutic and zootechnical use only
Anti-inflammatory agents/Nonsteroidal anti-inflammatory agents	**Diclofenac**	

Use of antimicrobial veterinary pharmaceuticals and AMR is the first problem which have begun to tell

not only for treatment

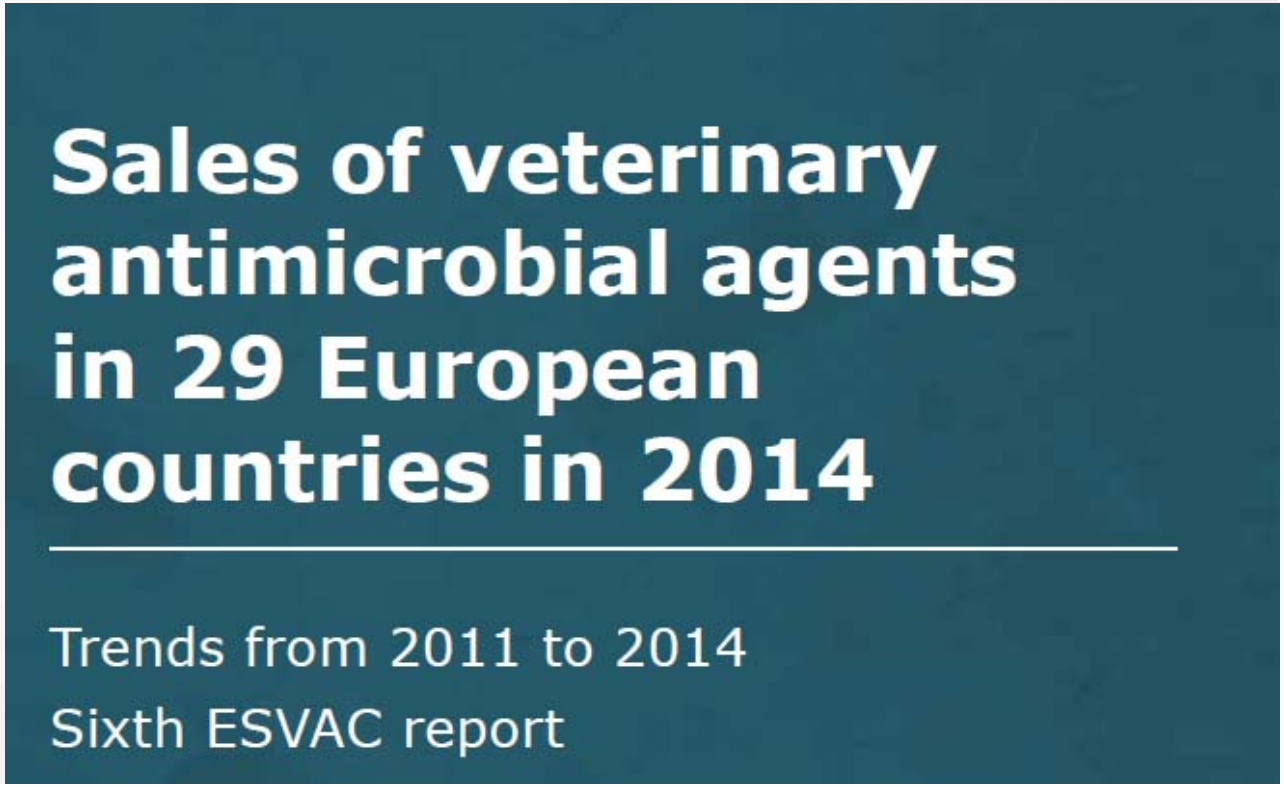


The proportion
of antibiotics used
in livestock compared
with humans is
very surprising

More than 70 %
of the antibiotics
sold in the United States
and over 50 %
in most countries in the world
are used in livestock

Denmark
Between 1992 and 2008 antimicrobial use in pig decreased by 51 %
from 100.4 to 48.9 mg/kg meat

Netherlands
From 2007 to 2012, antibiotic sales to Dutch livestock farms decreased 56 percent without any reduction in production or profits



Sales veterinary pharmaceuticals for food-producing animals, tons

Germany	1 305,8
Poland	578,5
Denmark	106,8
Lithuania	11,9
Finland	11,4
Estonia	9,8
Sweden	9,3
Latvia	6,3

The present state of VETmeds in the environment can be summarised as follows:

- there is **limited knowledge on the usage** of certain VETmeds;
- there is **limited knowledge on the fate** of many VETmeds;
- there is **limited knowledge on the ecological effects** of most VETmed;
- VETmed are often **mobile and found in drainage waters**;
- there is **limited knowledge on biodegradation in manure and slurry**;
- more knowledge is needed to predict dissipation/biodegradation in manure/soil **mixtures**;
- priority compounds are certain **antibiotics, steroid hormones**;
- **antibiotic resistance** in the environment needs more attention

«Pharmaceuticals in the environment»
Results of an European Environmental Agency workshop , 2010

центр экологических решений

- **Implement regulation to reduce not only antibiotic use**
- **Tax use**
- **Subsidies the cost of implementing infection control measures or alternatives**

1.Vaccines
2. Early diagnostic
3. Public awareness

Concentration of pharmaceuticals in belarusian lakes

Closed lake	In reserved zone	Nothing
Lake	Fishery, falling ameliorative canals	**Ethinilestradiol** (0.39 mkg/l, water) **Drotaverine** (0.003 mkg/l, slage)
Water reservoir /lake	Fishery, dam, city wastewater	**Ethinilestradiol** (0.3 mkg/l, water) **17-b estradiol** (0.12 mkg/l, water 0.007 mkg/l, slage) **Drotaverine** (0.0001 mkg/l, slage) **Ciprofloxacine** (0.0002 mkg/l, slage)

Центр экологических решений

Спасибо за внимание!

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