

FINRES-Vet 2018

Summary

Finnish Veterinary Antimicrobial Resistance Monitoring
and Consumption of Antimicrobial Agents



The full report is available at:
www.ruokavirasto.fi



RUOKAVIRASTO
Livsmedelsverket • Finnish Food Authority

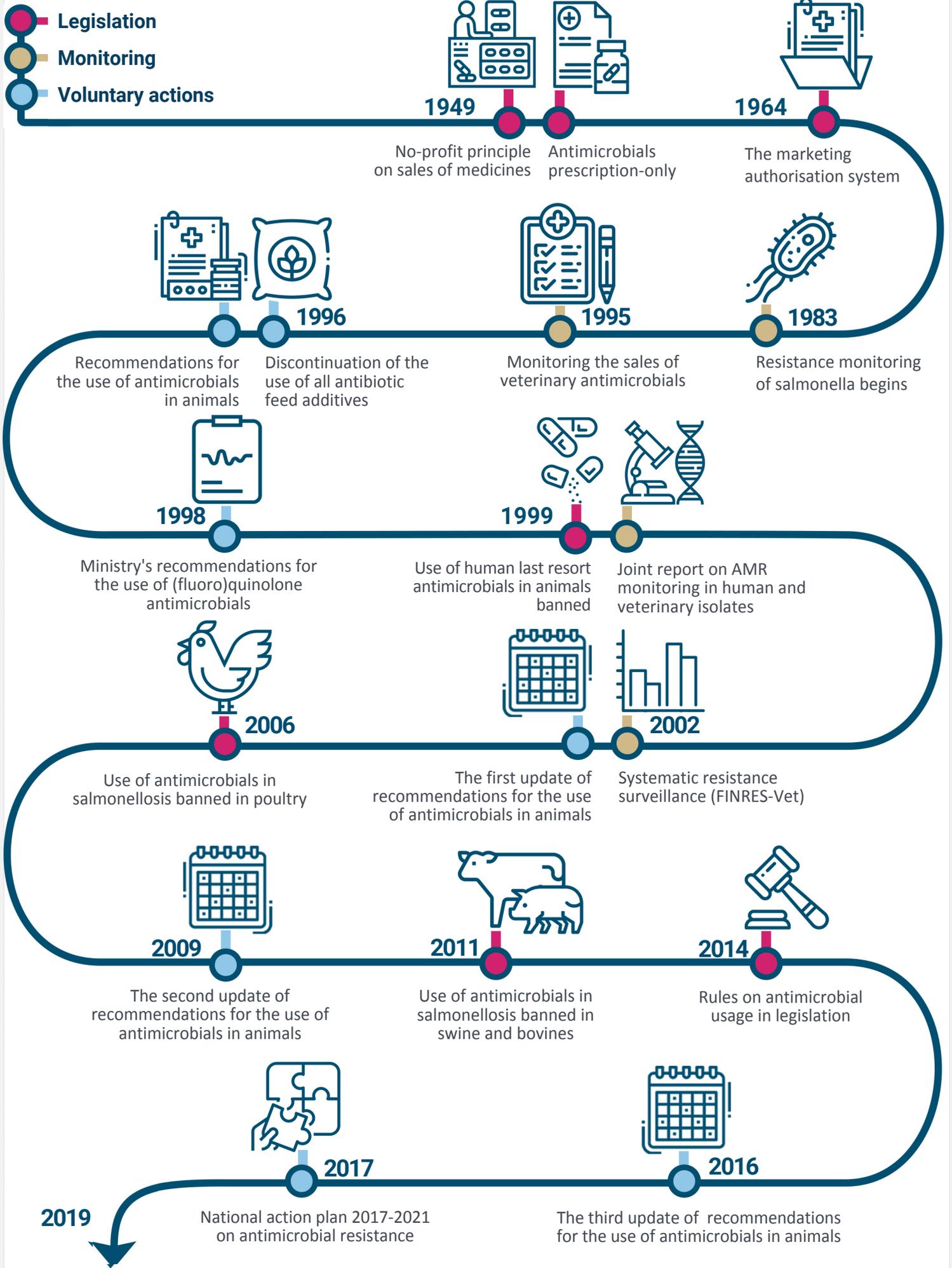


Graphic design: Venla Kivilahti



HELSINGIN YLIOPISTO
HELSINGFORS UNIVERSITET
UNIVERSITY OF HELSINKI

Milestones in prudent use of antimicrobials

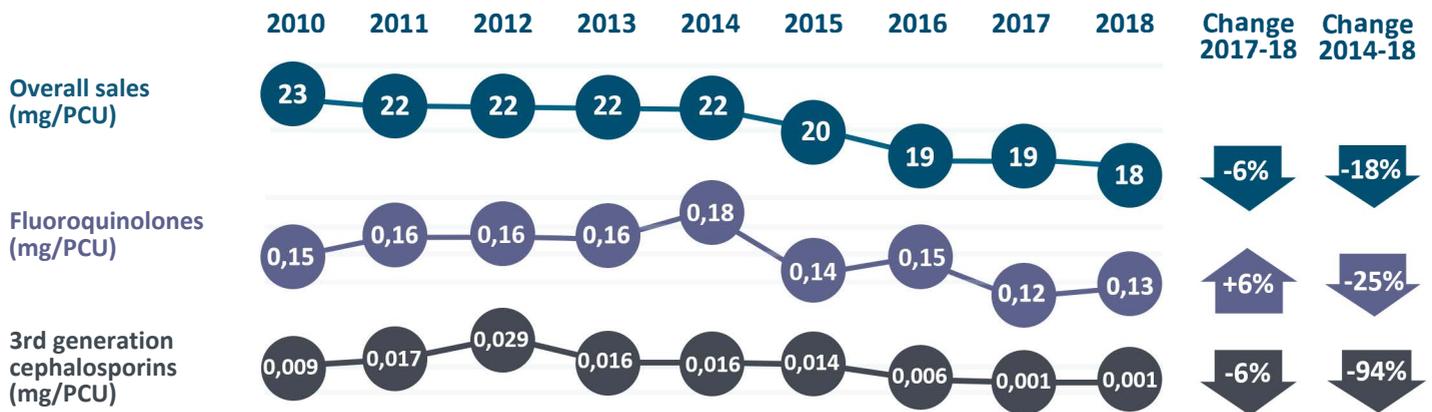


Antimicrobials for food-producing animals

EU-indicators for the use of antimicrobials in food-producing animals (mg/PCU)

Consumption of veterinary antimicrobials in food producing animals in Finland is very low. In 2018 overall sales for food-producing animals was the lowest ever recorded, 18 mg/PCU (PCU = population correction unit).

Sales of 3rd generation cephalosporins have been extremely low in Finland and last year decreased further close to zero. Sales have declined by 94% since the peak year 2014. An overall decreasing trend from 2014 is seen in sales of fluoroquinolones although there are minor fluctuations between the years.



Total sales (kg active ingredient)

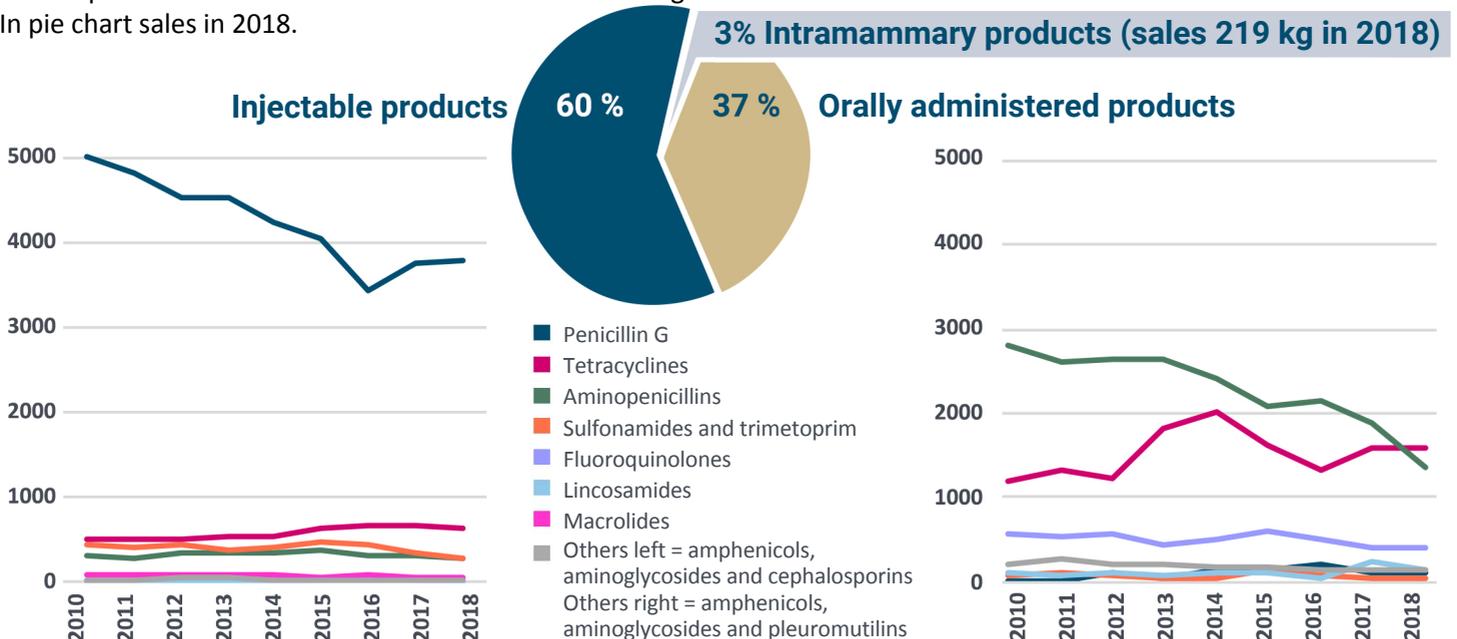
Total sales of veterinary antimicrobials have decreased by 20 % from 2010.



Sales by administration route (kg active ingredient)

Majority of the antimicrobials for food-producing animals are given as individual treatment (injectables and intramammaries). Injectable penicillin was the most sold antimicrobial followed by tetracyclines and sulfa-trimetoprim combination administered in feed or drinking water.

In pie chart sales in 2018.



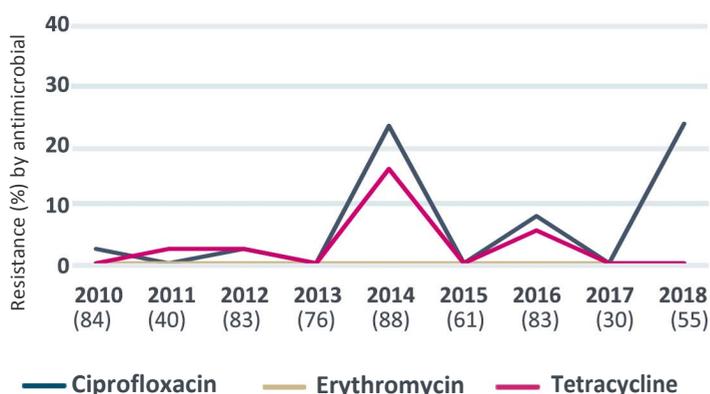
Zoonotic and indicator bacteria in food-producing animals

The majority of campylobacter isolates from the national control programme are fully susceptible to the tested antimicrobials.

Resistance to quinolones and tetracycline has varied from 2014. Strains concurrently resistant to three or more antimicrobial classes (multidrug resistance) have not been detected.

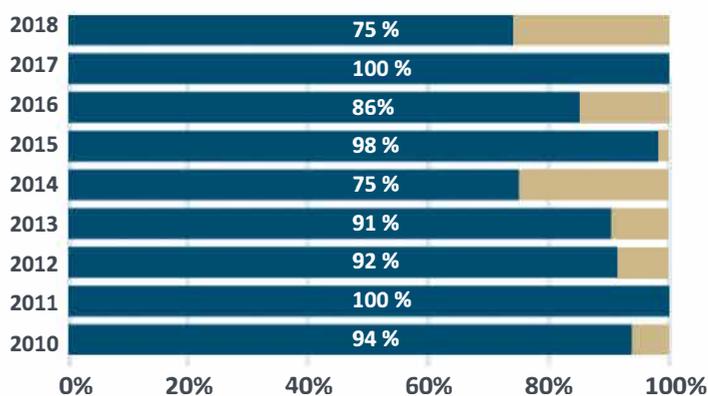


Resistance to ciprofloxacin, erythromycin and tetracycline in *C. jejuni* from broilers



The number of bacteria in each year in brackets.

Antimicrobial resistance in *C. jejuni* from broilers



■ Fully susceptible to the tested antimicrobial classes
■ Resistance to one or two antimicrobial classes

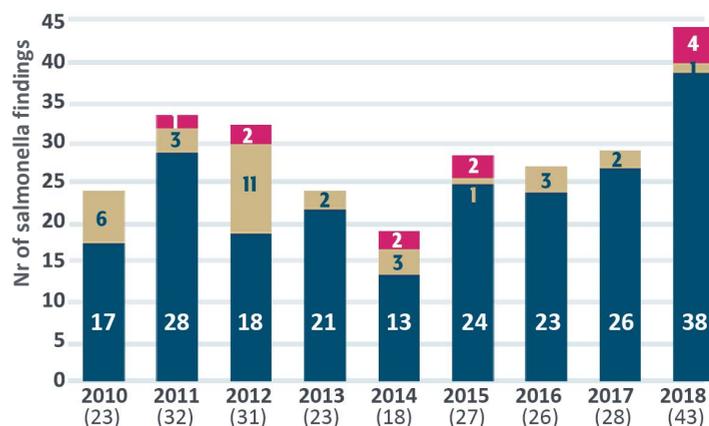
Salmonella bacteria isolated from the national salmonella control programme have mostly been susceptible to the tested antimicrobial classes.

In 2018, multiresistant *Salmonella* Kentucky ST198 was discovered for the first time.

S. Kentucky was found in one dairy farm and three calf rearing farms which had bought calves from the positive dairy farm.



Salmonella bacteria and their resistance from the Finnish food-producing animals



■ Fully susceptible to the tested antimicrobial classes
■ Resistance to one or two antimicrobial classes
■ Resistance to three or more antimicrobial classes

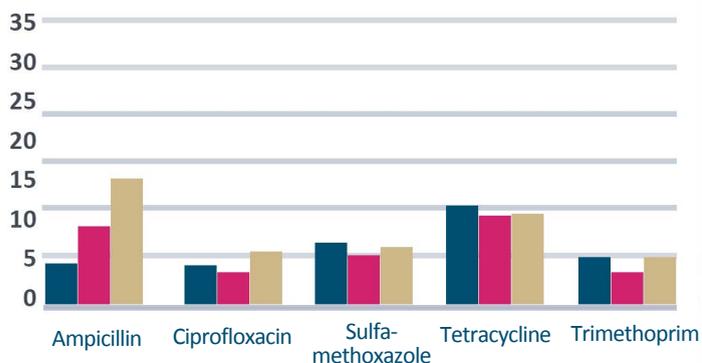
Zoonotic and indicator bacteria in food-producing animals

The majority of indicator *E. coli* isolated from broilers is fully susceptible to the tested antimicrobial classes.

Resistance is mostly detected against ampicillin, tetracycline, sulfamethoxazole, trimethoprim and ciprofloxacin. Multiresistant bacteria have only been detected at low level.



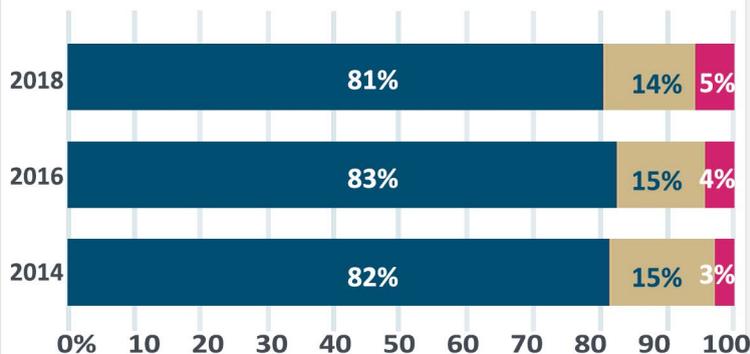
Resistance in indicator *E. coli* from broilers to selected antimicrobials



■ 2014 (175) ■ 2016 (184) ■ 2018 (173)

The number of bacteria in each year in brackets.

Antimicrobial resistance in indicator *E. coli* from broilers



■ Fully susceptible to the tested antimicrobial classes
 ■ Resistance to one or two antimicrobial classes
 ■ Resistance to three or more antimicrobial classes

ESBL/AmpC- and carbapenemase-producing *E. coli* in broilers and broiler meat

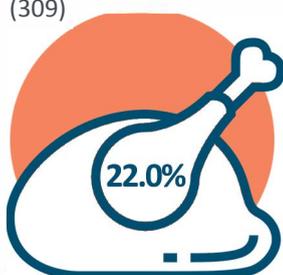
Number of samples tested in parentheses.

2016

Broilers at slaughter
(306)



Fresh broiler meat,
at retail
(309)

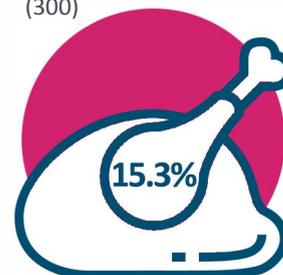


2018

Broilers at slaughter
(289)



Fresh broiler meat,
at retail
(300)

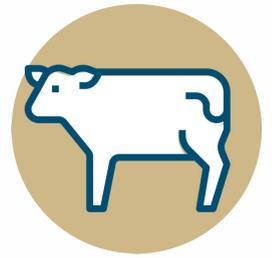


The prevalence of ESBL- and AmpC-producing *E. coli* bacteria in broilers and broiler meat has been moderate. AmpC has been the most prevalent enzyme type. Carbapenemase-producing *E. coli* have not been found.

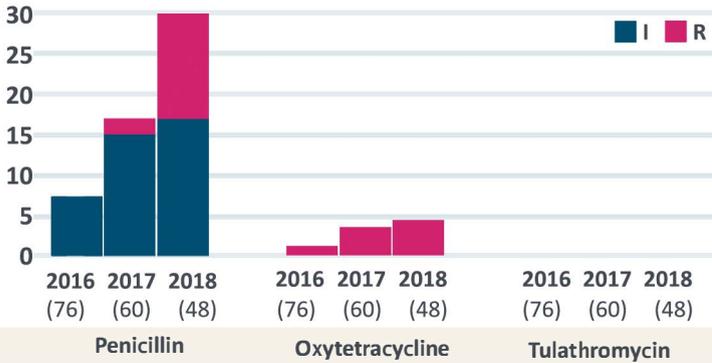
Pathogens in food-producing animals

Cattle

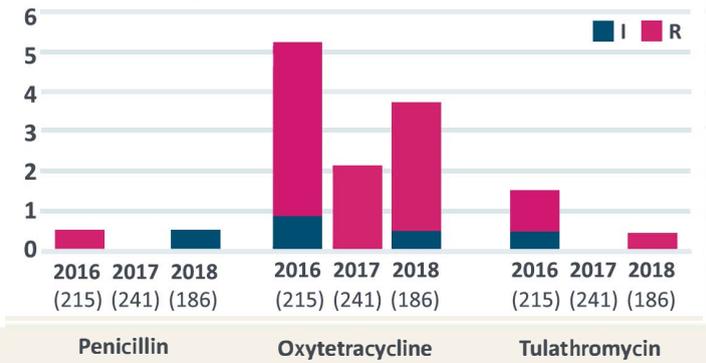
Among bovine respiratory pathogens, the antimicrobial susceptibilities of *Mannheimia haemolytica*, *Pasteurella multocida* and *Histophilus somni* bacteria isolated from diseased animals are reported. Resistance situation in *P. multocida* is in general good and no changes can be seen over the last three years. In *M. haemolytica*, the decreased susceptibility to penicillin has increased each year during the last three years.



The proportion (%) of *M. haemolytica* from bovine respiratory diseases with decreased susceptibility*



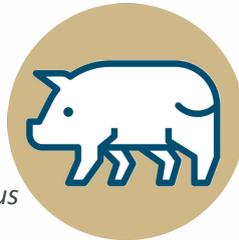
The proportion (%) of *P. multocida* from bovine respiratory diseases with decreased susceptibility*



The number of bacteria each year in brackets.

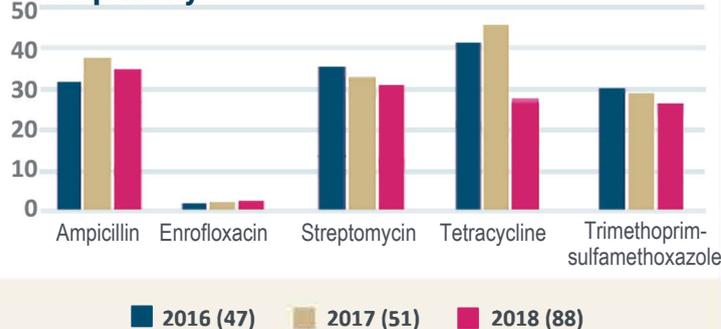
Swine

Among swine pathogens, the antimicrobial susceptibilities of enterotoxigenic *Escherichia coli*, *Brachyspira pilosicoli* and *Actinobacillus pleuropneumoniae* isolates from diseased animals are reported. In *B. pilosicoli* and *A. pleuropneumoniae*, no significant changes compared to the previous years were detected in 2018.



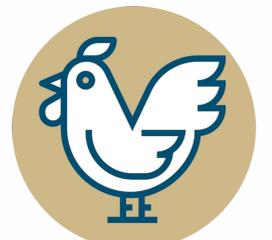
In enterotoxigenic *E. coli*, resistance to several antimicrobials was commonly detected as in previous years. Multidrug resistance was detected in 36 (41%) isolates from 18 farms. Five isolates from three farms were AmpC producers. No ESBL-producers were detected.

The proportion (%) of enterotoxigenic *E. coli* from porcine enteritis with decreased susceptibility*



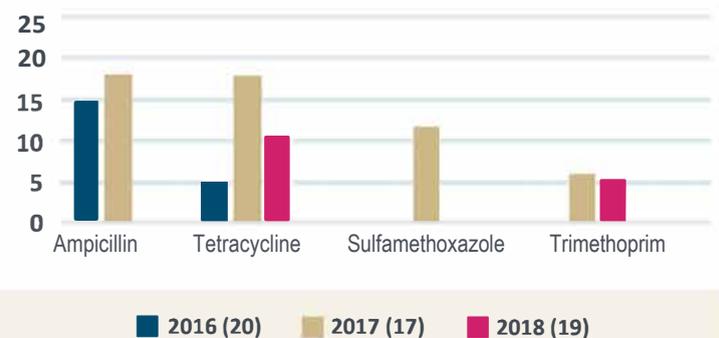
Broiler

Among poultry pathogens, the antimicrobial susceptibilities of *E. coli* from colibacillosis cases and *Staphylococcus aureus* from arthritis and tenosynovitis are reported.



In 2018, no resistance to the tested antimicrobials was detected in *S. aureus* strains when clinical breakpoints were applied. In *E. coli*, resistance to fluoroquinolones or 3rd generation cephalosporins was not detected.

The proportion (%) of *E. coli* from broiler colibacillosis with decreased susceptibility*



*Decreased susceptibility means that bacterial strains are phenotypically either resistant (R) or intermediately susceptible (I) to the antimicrobial in question according to clinical breakpoints.

Companion animals

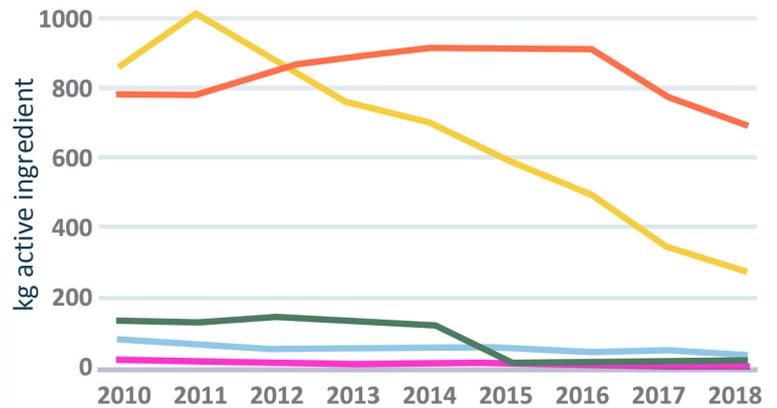
The number of dogs and cats

Statistics Finland estimated that there were 630 000 dogs and 592 000 cats in Finland in 2012. In 2016, the number of dogs had increased to 700 000 while the number of cats remained stable (around 600 000).

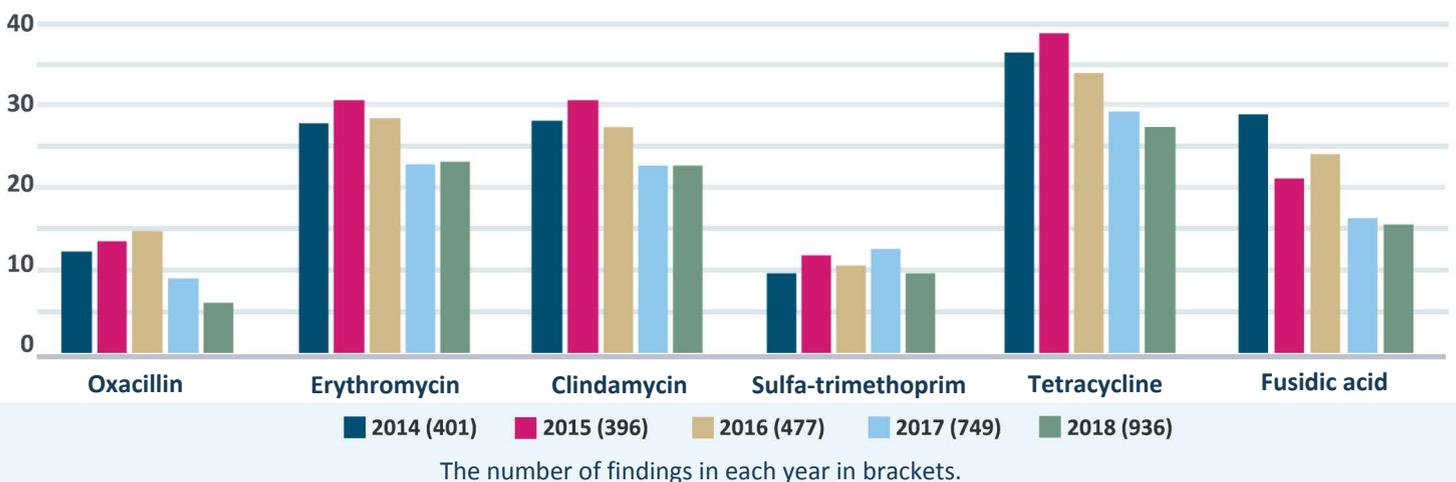


Sales of tablets

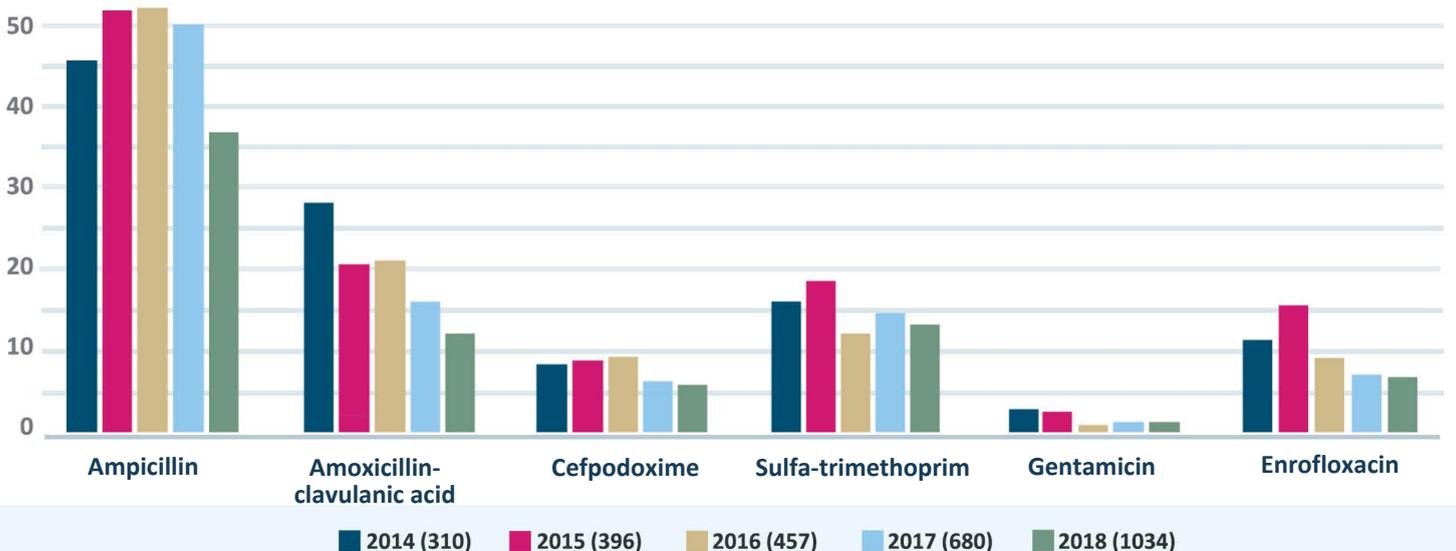
Sales of tablets intended to companion animals has almost halved from the year 2011. The sales of 1st generation cephalosporins has decreased the most. Aminopenicillins and fluoroquinolones were also sold less than before.



The proportion (%) of canine *S. pseudintermedius* isolates with decreased susceptibility



The proportion (%) of canine *E. coli* isolates with decreased susceptibility



Among *E. coli* from dogs, the proportion of ESBL findings has decreased steadily from 2015 and was only 1.2% in 2018.