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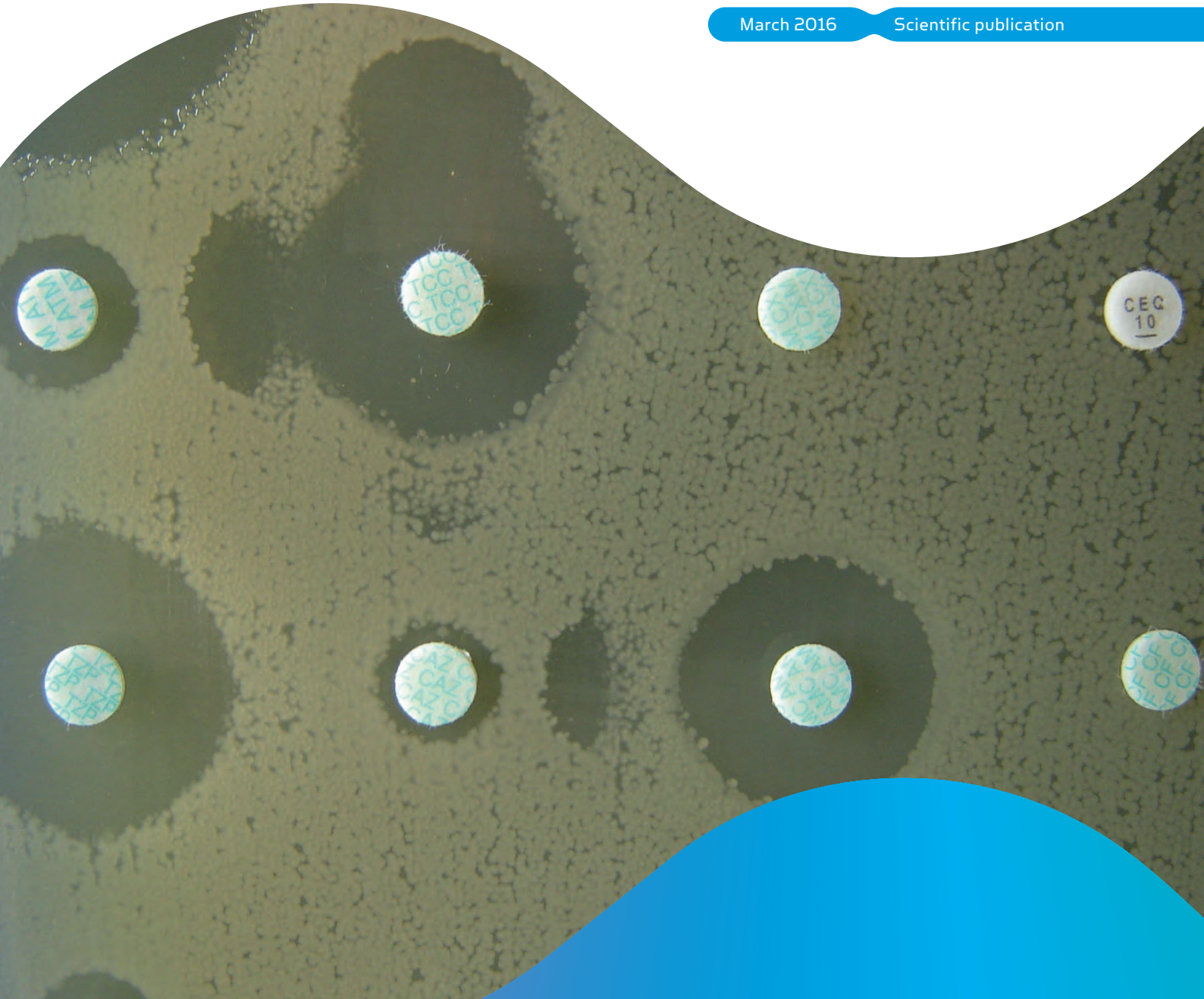
RESAPATH

French surveillance network for antimicrobial resistance in pathogenic bacteria of animal origin

2014 Annual Report

March 2016 Scientific publication



Contents

INTRODUCTION

Monitoring of Antimicrobial Resistance in Pathogenic Bacteria in Animals in France in 2014: Summary Report of the RESAPATH network

The French surveillance network for antimicrobial resistance in pathogenic bacteria of animal origin (RESAPATH) was set up in 1982 under the name of RESABO (BO for bovines). In 2000, it was expanded to pigs and poultry and, in 2007, to other animal species such as small ruminants, companion animals or horses. RESAPATH is a long-term cooperative effort by 69 local routine laboratories throughout France coordinated by the Lyon and Ploufragan-Plouzané Laboratories at the French Agency for Food, Environmental and Occupational Health Safety (ANSES). As mentioned below, the information presented here is based on data from an on-going surveillance system estimating the proportion of resistances to relevant antibiotics in diseased animals treated by veterinarians as part of their regular clinical services. RESAPATH is also a key component of the recent strategic action Plan (EcoAntibio) adopted by the French Ministry of Agriculture, Food and Forest to combat antimicrobial resistance in animals. The epidemiology of resistance is increasingly complex and we strongly believe that providing annual data of resistance trends in animal pathogens contributes to a comprehensive overview of antimicrobial resistance in veterinary medicine. We especially thank all laboratories and staff who are contributing to these surveillance efforts and to a better control of this major issue in animals.

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On behalf of the RESAPATH

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ORGANISATION AND KEY FIGURES

The objectives of the RESAPATH are the followings:

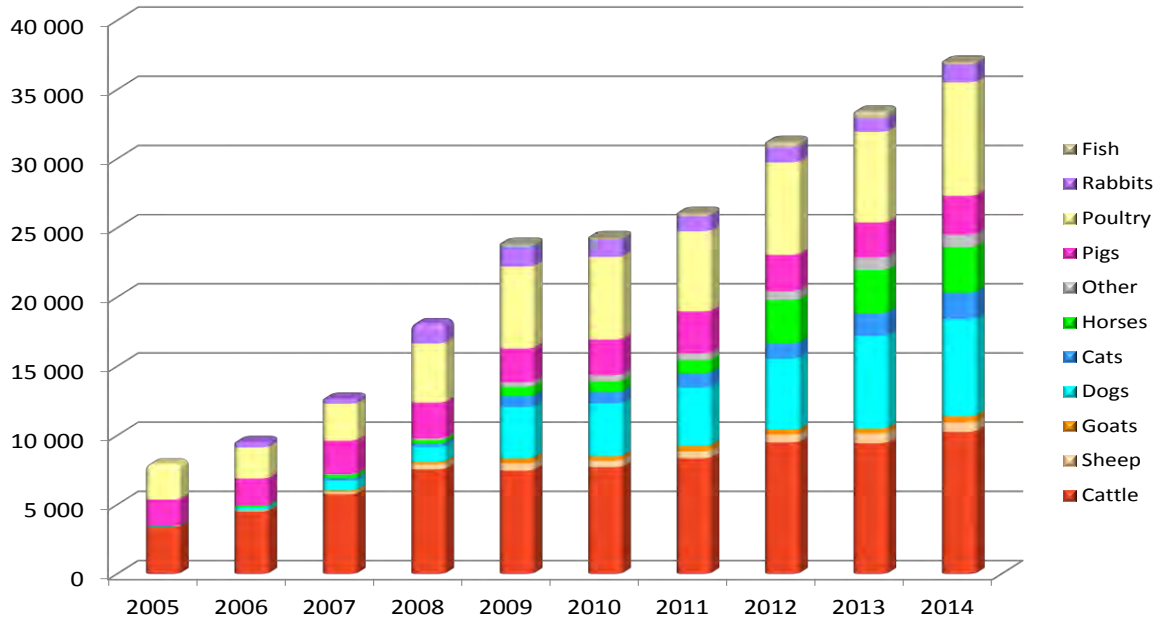
- To monitor antimicrobial resistance in pathogenic bacteria of animal origin in France,
- To collect resistant isolates of particular interest and to characterize their genetic background (including deciphering mechanisms of resistance),
- To provide a technical support to local laboratories.

Bacteria recovered from diseased animals and sampled by veterinarians for diagnostic purposes as part of their routine activity are tested for antimicrobial susceptibility by private or public local veterinary laboratories throughout France. Antibiograms are performed by disk diffusion according to the guidelines of the veterinary part of the Antibiogram Committee of the French Society of Microbiology (CA-SFM) and of the AFNOR NF U47-107 standard, and inhibition zone diameters are transmitted to ANSES. Isolates are then categorized as susceptible (S), intermediate (I) or resistant (R) according to the recommendations provided by the veterinary part of the CA-SFM. Should no established breakpoints be available, critical values provided by the manufacturer for the corresponding molecules are used.
In addition to data collection, RESAPATH also allows the collection of isolates harbouring resistance profiles of specific interest (such as resistance to broad-spectrum cephalosporins), which are then subjected to in-depth molecular studies. Laboratories participate to annual ring trials (External Quality Assurance System), which contribute to the quality control of the data gathered by RESAPATH. In addition, annual training sessions, technical support, on-site training and other actions are also provided.

RESAPATH is the unique veterinary member of the French National Observatory for Epidemiology of Bacterial Resistance to Antimicrobials (ONERBA), which encompasses 17 other surveillance networks throughout France, all in private or public human practices. RESAPATH is a passive or 'event-based' surveillance network. Member laboratories join the RESAPATH on a voluntary basis and data collected depend on the initial decision of veterinary practitioners. Hence, those data cannot be considered as perfectly representative of the global resistance of pathogenic bacteria but are a good indicator of their resistance rates in field conditions. In all, the significance of this monitoring relies on its ability to detect most resistant bacteria and to measure trends over time in antimicrobial resistance in diseased animals in France.

In 2014, 69 laboratories were members of RESAPATH and a total of 36,989 antibiograms were transmitted to ANSES, all animal species included. The evolution of the distribution of antibiograms per animal sector is presented in Figure 1.

Figure 1: *Annual number of antibiograms collected per animal sector*



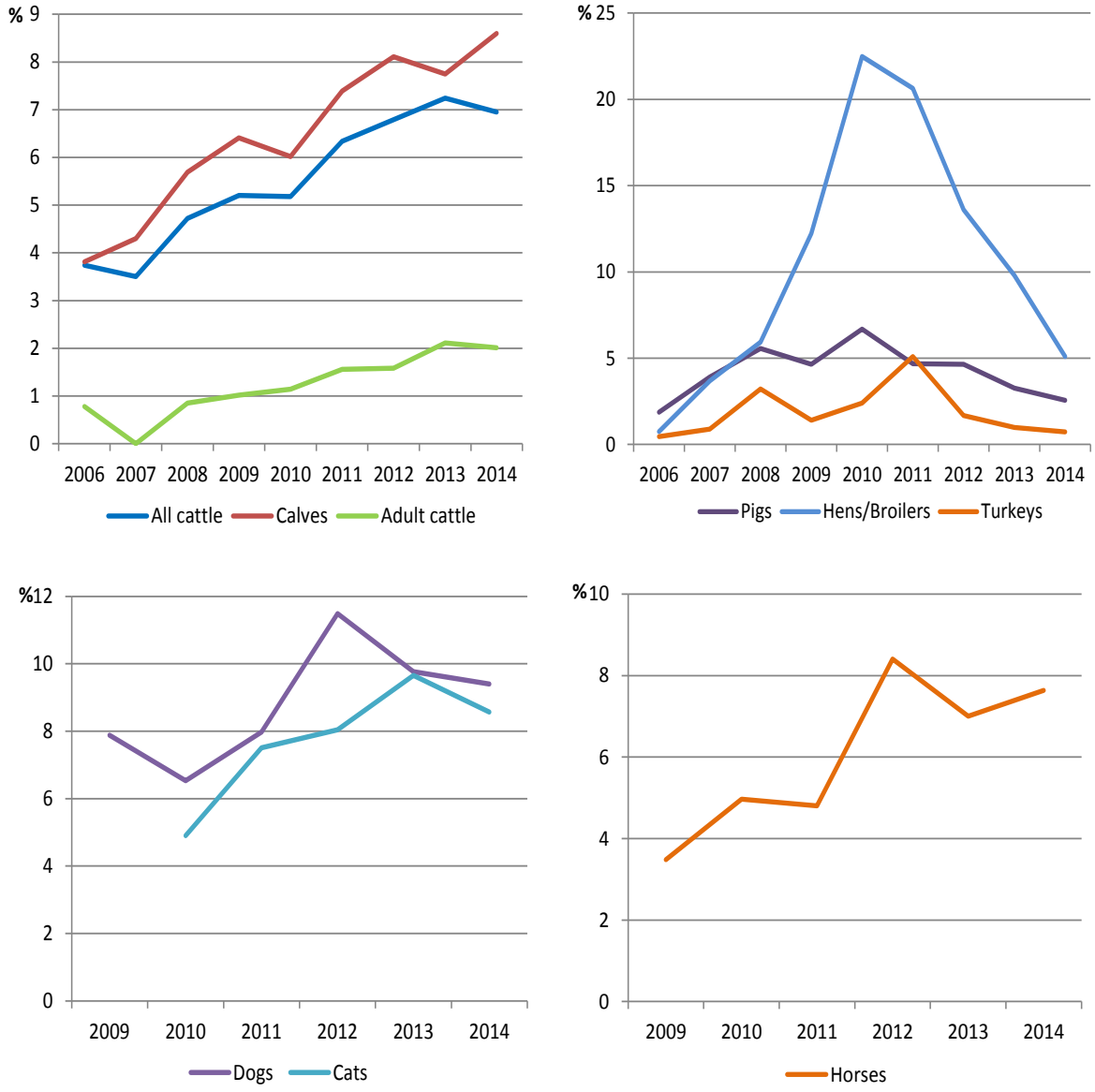
RESISTANCE DATA

This chapter summarizes the key results on resistance trends to the different antimicrobial classes, especially to broad-spectrum cephalosporins and fluroquinolones that are considered as critically important both in human and veterinary medicine. Other important topics such as resistance trends to other antibiotics or colistin-resistance in livestock are also included. Detailed information on resistances of the clinical isolates is available for each animal species and infection types in the Annex section.

Resistance to broad-spectrum cephalosporins

Isolates are routinely tested for susceptibility to ceftiofur and cefquinome for food animals and horses, and to ceftiofur and cefovecin for companion animals. Resistance is mainly observed for *Escherichia coli* and to a lesser extent for *Klebsiella pneumoniae* and *Enterobacter* spp. In 2014, the highest rate of resistance to ceftiofur in clinical *E. coli* isolates was around 9.4% for dogs and 8.6% for cats and calves. Resistance to ceftiofur in other animal species was 7.0% for horses, 5.1% for broilers, 2.8% for goats, 2.6% for pigs, 2% for adult cattle, 1% for sheep and 0.7% for turkeys.

***Figure 2**: Evolution of proportions of E. coli isolates non-susceptible (R+I) to ceftiofur in cattle, pigs, poultry, turkey, horses, cats and dogs (2006-2014)*



In broilers, resistance to ceftiofur in *E. coli* is continuously decreasing since 2010 (2010: 22.5%, 2011: 20.6%, 2012: 13.6%, 2013: 9.8%, 2014 : 5.1%), which is highly encouraging (Figure 2). A similar decrease is observed in turkey and pigs suggesting that ESBL dissemination in those three sectors could be soon under control.

In dogs, a decreasing trend in ceftiofur resistance is observed for the second year. This trend is especially observed in urinary tract infections, which are the main *E. coli* infections in dogs. On the contrary, ceftiofur resistance is increasing in otitis (2012: < 5%, 2013: 8-11%, 2014: 13%) but *E. coli* are quite rare in this pathology so that it does not change the global trend. In cats, a decrease in the prevalence of ceftiofur resistance is observed for the first time.

The number of antibiograms from horses drastically increased in 2012 after the adhesion of a laboratory specialized in horses' diseases. Consequently, 2012 can be considered as a statistically relevant starting point for the surveillance of resistance in horses. Since then, resistance to ceftiofur appears stable (around 8%).

In cattle, the main reservoir of resistance to broad-spectrum cephalosporins remains calves. The downward trend observed in 2013 is not confirmed in 2014. Indeed, resistance to ceftiofur increased (from 7.7% to 8.6%), in line with the global upward trend observed since 2006. Of note, resistance rate in adult cattle was stable in 2014.

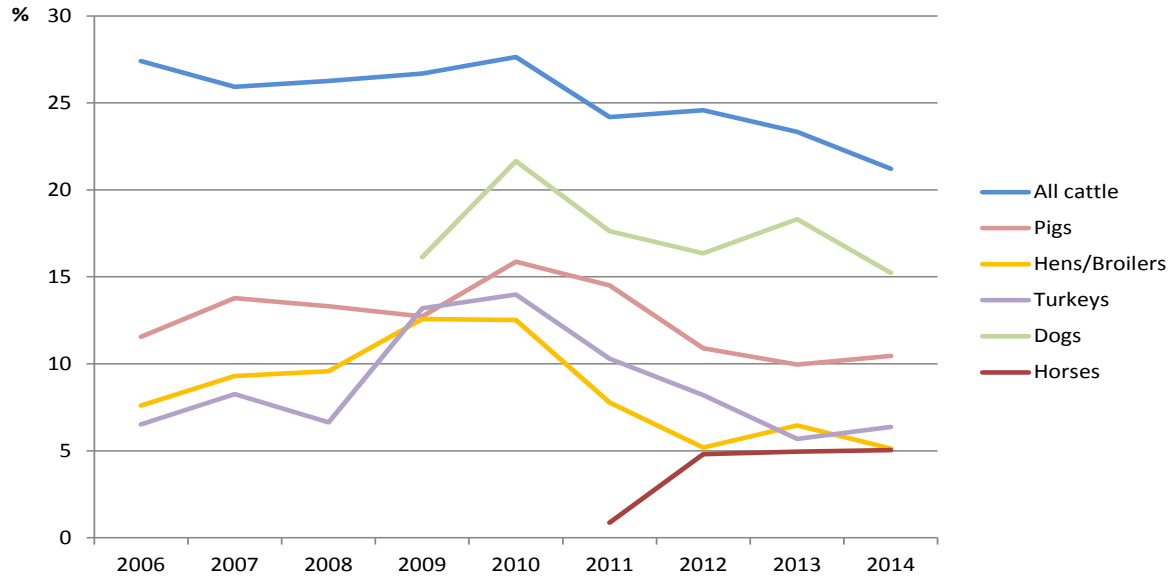
In France, as in other European countries, health-care professionals and political authorities asked for a decrease in resistance to last generation cephalosporins. Downward trends are already observed in several sectors even though economic, zootechnical and sanitary constrains considerably vary with the type of animal species and/or production. It will now be important to maintain the effort to reach the objective in all veterinary sectors.

Resistance to fluoroquinolones

Isolates are routinely tested for susceptibility to enrofloxacin, marbofloxacin or danofloxacin. Other fluoroquinolones are also tested depending on the animal species, including the recently marketed pradofloxacin in companion animals. In Figure 3, resistance to either enrofloxacin or marbofloxacin in *E. coli* was used as an indicator of resistance to fluoroquinolones.

Data gathered in 2014 show that the highest rate of fluoroquinolone resistance are still found in cattle (>20%) even though it follows a continuous downward trend since 2010. Enrofloxacin resistance in dogs also decreased last year whereas it was stable in other sectors. Nevertheless, resistance proportions of fluoroquinolones remain much higher than those of last-generation cephalosporins.

***Figure 3**: Evolution of proportions of E. coli isolates non-susceptible (R+I) to enrofloxacin or marbofloxacin in cattle, pigs, poultry, turkeys, horses and dogs (2006-2014)*



Resistance to other antibiotics

Trends over time were investigated in *E. coli*. The list of antimicrobials considered for this issue included the most frequently tested molecules by the RESAPATH laboratories for classes relevant in veterinary practice (excluding broad-spectrum cephalosporins and fluoroquinolones studied separately). Seven antibiotics (5 classes) were chosen, namely gentamicin, spectinomycin or streptomycin, trimethoprim-sulfonamides in combination, tetracycline, amoxicillin, amoxicillin and clavulanic acid in combination, and a quinolone (nalidixic or oxolinic acid). Trends were analysed over the period 2006-2014 in cattle, pigs and poultry.

Resistances in cattle show a significant but low decrease for all considered antimicrobial except for amoxicillin (no significant trend) (Figure 4). The most pronounced variations are for resistance to aminoglycosides (gentamicin excepted) and for amoxicillin and clavulanic acid in combination.
In pigs, the resistance to amoxicillin and clavulanic acid in combination displays an important decrease since 2006 whereas resistance to amoxicillin is stable (Figure 5). Resistances to tetracyclines, to spectinomycin or streptomycin and to the association trimethoprim-sulfonamides decrease as well but in smaller proportions. Resistance to quinolones shows a small but significant decrease. Resistance to gentamicin is overall increasing, but the decreasing trend which started in 2013 is confirmed in 2014.
Resistances in poultry show an overall more pronounced decrease. For hens and broilers (*Gallus gallus*), the trend is not linear and displays a visible decrease since 2009-2010, particularly for resistance to tetracycline which was divided by two since 2009 (but remains the resistance with the highest proportions among the antimicrobial considered) (Figure 6). Resistance to gentamicin is low but increases since 2011. For turkeys, the decrease started since 2006, except for aminoglycosides which presented an overall small increase (which stopped in 2011 for spectinomycin or streptomycin) (Figure 7).

***Figure 4**: Evolution of proportions (%) of E. coli isolates non-susceptible (R+I) to 7 antimicrobials in cattle (2006-2014)*

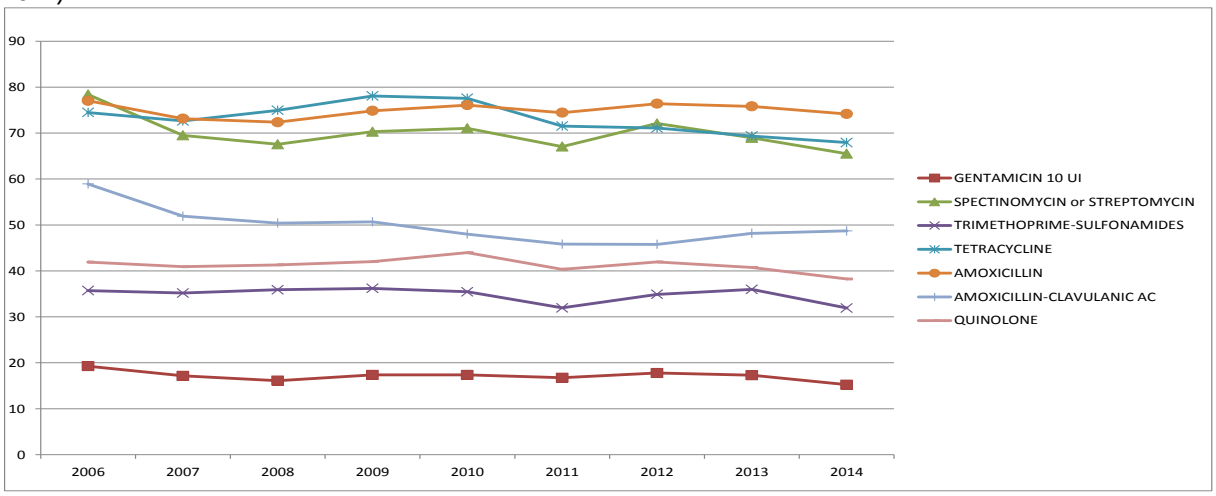


***Figure 5**: Evolution of proportions (%) of E. coli strains non-susceptible (R+I) to 7 antimicrobial in pigs (2006-2014)*

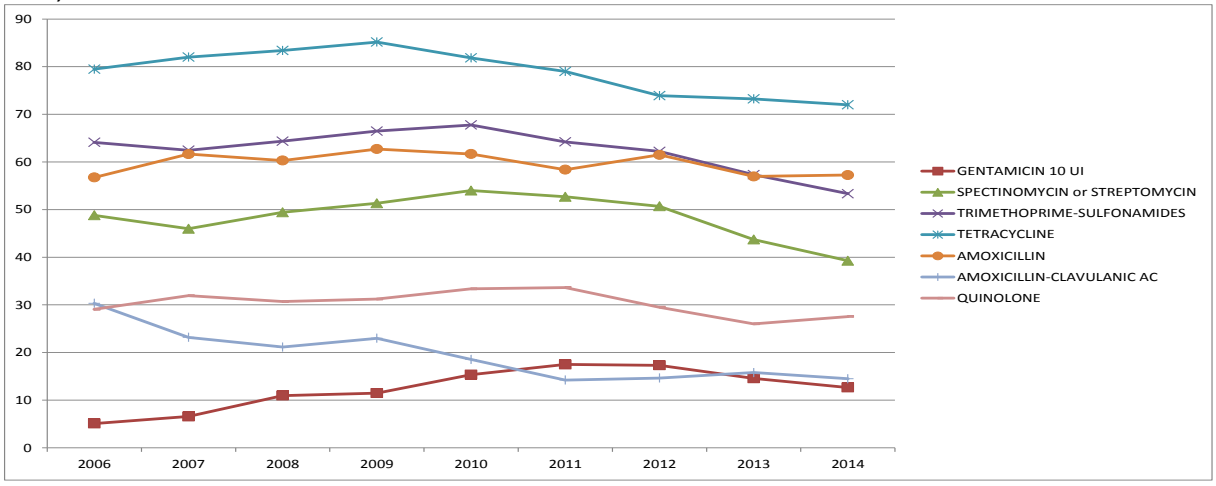


***Figure 6**: Evolution of proportions (%) of E. coli isolates non-susceptible (R+I) to 7 antimicrobials in hens and broilers (2006-2014)*

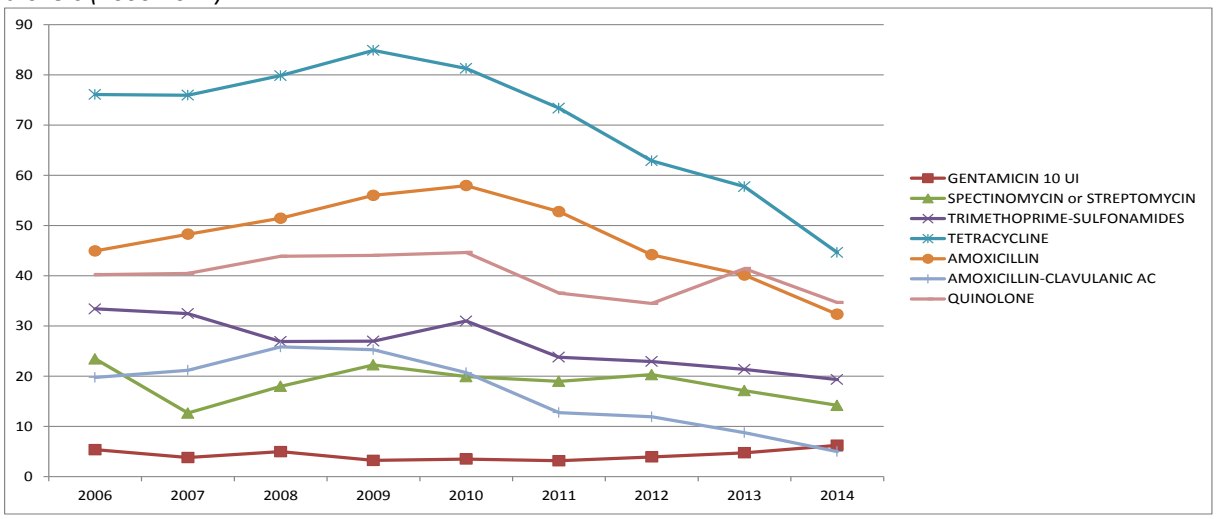
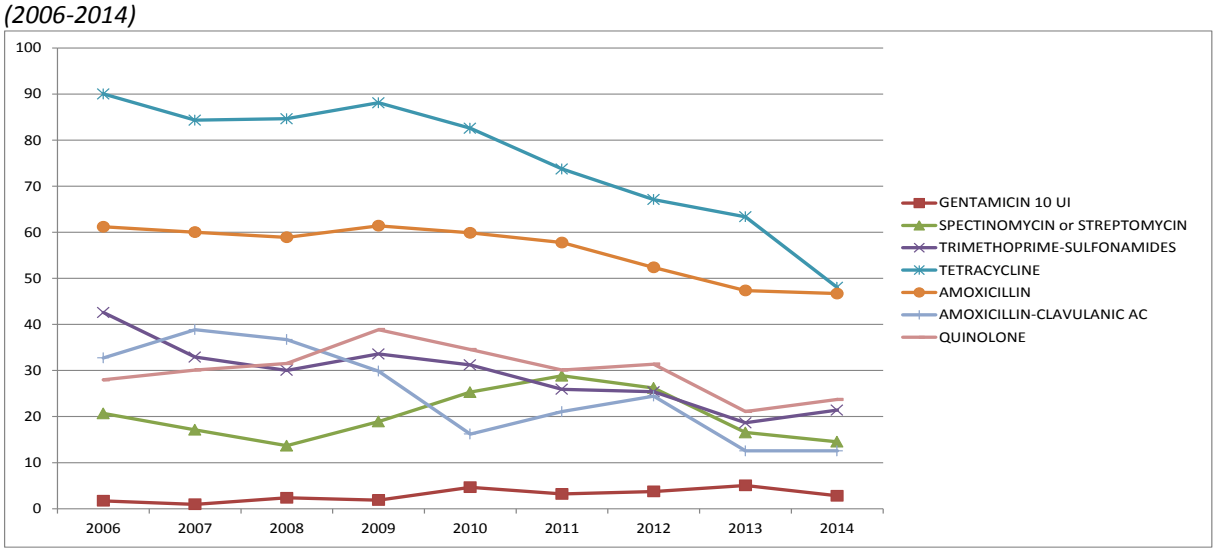


***Figure 7**: Evolution of proportions (%) of E. coli isolates non-susceptible (R+I) to 7 antimicrobials in turkeys (2006-2014)*



Multidrug resistance

Multidrug resistance was investigated in *E. coli*, the most frequent bacterial species among the RESAPATH data. The selection criteria to choose the antimicrobials considered for this issue were: i) relevance in veterinary and human medicine, ii) a single molecule per class (as resistance mechanisms among a class are very often similar), iii) molecules frequently tested by the RESAPATH laboratories to guarantee a good representativity of the initial data. Five antibiotics were chosen, namely ceftiofur, gentamicin, tetracycline, trimethoprim-sulfonamide in combination, and either enrofloxacin or marbofloxacin. For dogs, tetracycline was not considered further as it is too rarely tested (in coherence with a limited usage).

In food-producing animals (cattle, pigs and poultry), the proportion of isolates collected by RESAPATH which had no resistance to any of the antimicrobials considered ranged from 18.6% in pigs to nearly half of the isolates in poultry (hens/broilers and turkeys) (Table 1). Since 2011 this proportion raised slowly but significantly for cattle (Chi² test for trend, p=0.02), regularly over time with a higher extend for pigs (p=0.0001) and has doubled for poultry (Figure 8). The proportion of multidrug resistant isolates (resistant to at least 3 classes of antimicrobials among the 5 considered) is the highest for cattle (21%, stable since 2011), decreased over the last years for pigs (p=0.0003) to reach 15.9% and was divided by two since 2011 for poultry (Figure 9). In cattle, contrary to pigs and poultry, ceftiofur resistant isolates harboured numerous co-resistances, such as to tetracycline and fluoroquinolones.

***Table 1**: Number and proportion of resistant isolates (R+I) from a list of five antimicrobials in E. coli in cattle, pigs and poultry*

Resistance number (R+I)	Cattle		Pigs		Hens/broilers		Turkeys	
	n	%	n	%	n	%	n	%
0	1,029	25.3	219	18.6	1,261	47.6	291	46.7
1	1,427	35.1	342	29.0	803	30.3	182	29.2
2	757	18.6	431	36.5	460	17.4	126	20.2
3	493	12.1	166	14.1	111	4.2	21	3.4
4	292	7.2	22	1.9	12	0.5	3	0.5
5	65	1.6	0	0.0	0	0.0	0	0.0
Total	4,063	100	1,180	100	2,647	100	623	100

***Figure 8**: Evolution of proportions (%) of E. coli isolates susceptible to all the five antimicrobials considered in cattle, pigs and poultry*

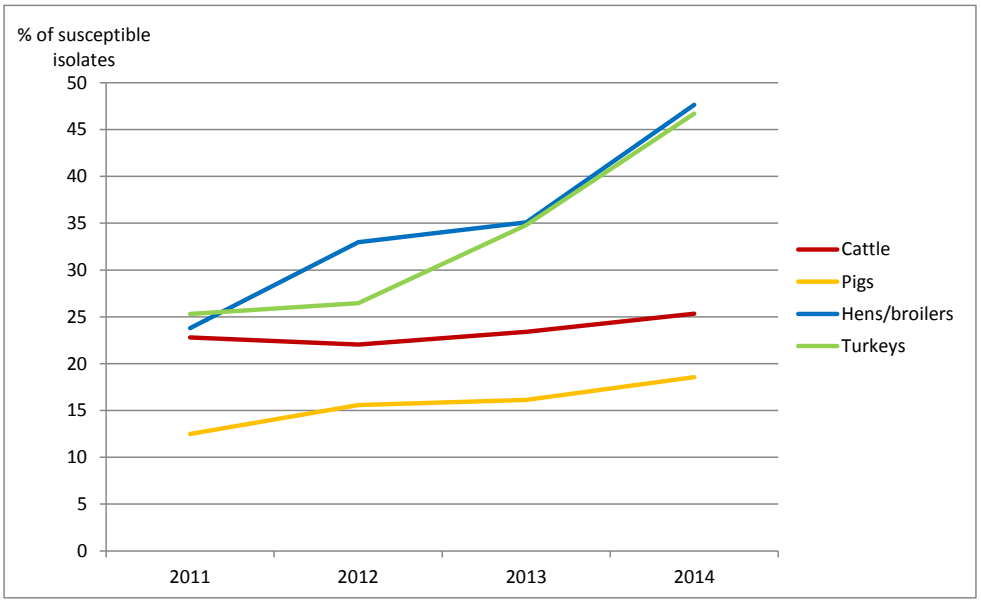
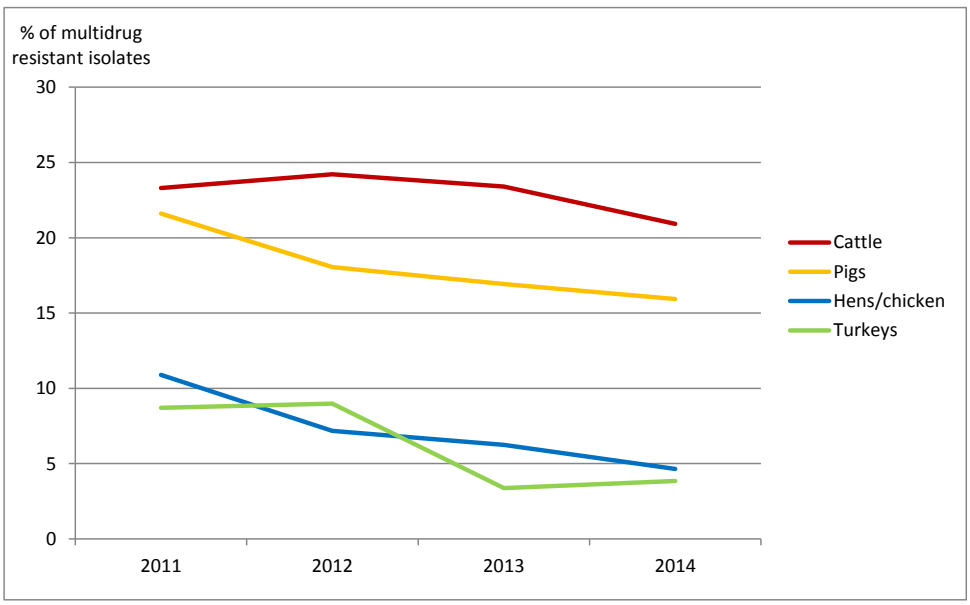


***Figure 9**: Evolution of proportions (%) of multidrug resistant E. coli isolates (resistant to at least three out of the five antimicrobials considered) in cattle, pigs and poultry*



For horses and dogs, the huge majority of the isolates (64 to 70%) were not resistant to any of the antimicrobials considered (Tables 2 and 3). Nonetheless, the proportion of multidrug resistant isolates (resistant to at least 3 antimicrobial classes) reached 11.1% in horses and 7.5% in dogs, which is higher than in the poultry sector, even if the relevance of a direct comparison is limited especially for dogs as only four antimicrobials were considered. As in cattle, ceftiofur-resistant isolates from horses and dogs had numerous co-resistances.

***Table 2**: Number and proportion of resistant isolates (R+I) from a list of five antimicrobials in E. coli in horses*

Resistance number (R+I)	Horses	
	n	%
0	352	64.1
1	99	18.0
2	37	6.7
3	19	3.5
4	32	5.8
5	10	1.8
Total	549	100

***Table 3**: Number and proportion of resistant isolates (R+I) from a list of four antimicrobials in E. coli in dogs*

Resistance number (R+I)	Dogs	
	n	%
0	758	70.0
1	150	13.9
2	94	8.7
3	58	5.4
4	23	2.1
Total	1,083	100

Altogether, these data highlight to what extent diseased animals became a major reservoir of multiple resistance genes. The abundance of multidrug resistant isolates confirms that the driving force for selection does not only rely on recently marketed molecules (cephalosporins, for instance) but that so-called "older" compounds, such as tetracyclines, may play a significant role as well.

Colistin resistance in veterinary medicine

Colistin use in veterinary medicine was abundantly discussed these last years since this molecule benefited from a renewed interest in human medicine in those clinical cases without any other therapeutic option. Several opinions were issued recently by the European Medicines Agency (EMA, July 2013, December 2014)[1,2], the French agency for food environmental and occupational health and safety (ANSES, April 2014)[3] and the European Commission (March 2015)[4]. The French National Agency for Medicines and Health Products Safety (ANSM) considered colistin as a “last resort” antibiotic for human medicine in 2013. In the same time and in a context where colistin remains a first-line antibiotic for digestive infections in livestock animals (poultry, swine, bovine), the OIE did not issue specific usage recommendations and an expert group identified the transfer of colistin-resistance to humans as weak.

Mechanisms of colistin-resistance are predominantly related to lipopolysaccharide (LPS) modifications. Late 2015, a new light was drawn on colistin resistance with the first plasmid-mediated *mcr-1* gene reported in livestock, humans and foodstuff worldwide and notably in China[5]. In France, and as in many other countries,

1 European Medicines Agency, Use of colistin products in animals within the European Union: Development of resistance and possible impact on human and animal health. EMA/755938/2012, 19 July 2013.
URL : http://www.ema.europa.eu/docs/en_GB/document_library/Report/2013/07/WC500146813.pdf

2 European Medicines Agency, Answers to the requests for scientific advice on the impact on public health and animal health of the use of antibiotics in animals. EMA/381884/2014, 18 December 2014.
URL : http://www.ema.europa.eu/docs/en_GB/document_library/Other/2014/07/WC500170253.pdf

3 Avis de l’Anses relatif à l’évaluation des risques d’émergence d’antibiorésistance liés aux modes d’utilisation des antibiotiques dans le domaine de la santé animale, avril 2014, URL https://www.anses.fr/fr/system/files/SANT2011sa0071Ra.pdf.

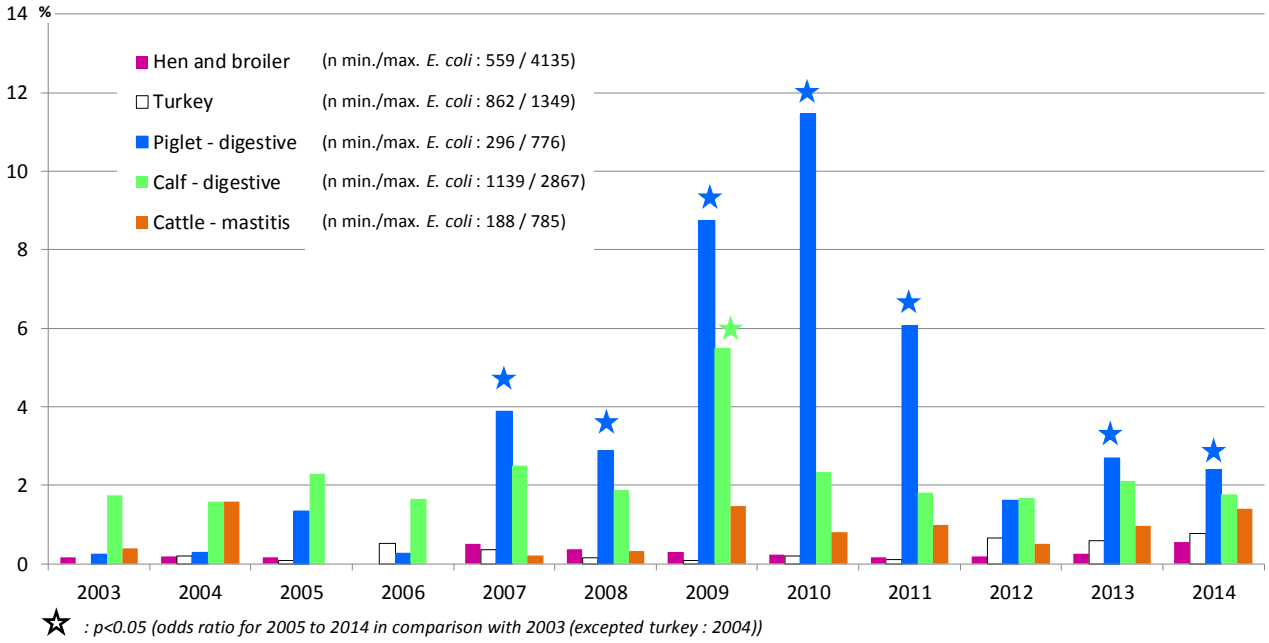
4 Décision adoptée le 16 mars 2015, suite à un référé pris au titre de l’article 35 de la directive 2001/82/CE relative aux médicaments vétérinaires et concernant toutes les AMM de formes orales de colistine (EMA/EC/2015)

5 Liu Y.Y., Wang Y., Walsh T.R., Yi L.X., Zhang R., Spencer J., Doi Y., Tian G., Dong B., Huang X., Yu L.F., Gu D., Ren H., Chen X., Lv L., He D., Zhou H., Liang Z., Liu J.H. Shen J. (2016) Emergence of plasmid-mediated colistin resistance mechanism MCR-1 in animals and human beings in China: a microbiological and molecular biological study. *The Lancet Infectious Diseases*, 16(2):161-8.

prevalence of colistin resistance in *E. coli* isolated from the digestive tract of healthy animals is under 1%[6]. In clinical samples, resistance is primarily found in diarrheic piglets. Annual trends issued by the Resapath show that colistin resistance is stable and low (<2%) in different animal sectors except for an unexplained outbreak between 2009 and 2011 *(Figure 10)*. However, as the disk diffusion method cannot detect all resistant isolates, the proportions of resistance presented here may be underestimated even though the comparison over time is meaningful. The next Resapath 2015 report will allow providing more insight into this issue in particular through comparative prevalence of phenotypic and genotypic data of colistin resistance in *E. coli*. In addition, in 2014 in France, the first reported colistin-resistant *Klebsiella pneumoniae* isolate of animal origin was described from bovine mastitis. The mechanism was not plasmid-mediated, yet identical to what had already been described in humans[7].

Globally, at this stage of investigation, surveillance data show that colistin resistance is stable over the last three years in bacterial pathogens isolated from animals despite a regular use over decades. Nevertheless, and in line with the recent need of this antibiotic in human medicine and the burning concern on the spread of the *mcr-1* gene in animals and humans, colistin resistance will need to be more closely monitored worldwide as for instance anticipated in France through the actions of the Ministry of Agriculture (EcoAntibio).

***Figure 10**: Evolution of annual proportions of E. coli with an inhibition zone under 15 mm towards colistin disk (50 µg)*



[6] Kempf I., Fleury M.-A., Drider D., Bruneau M., Sanders P., Chauvin C., Madec J.-Y., Jouy E. (2013). What do we know about resistance to colistin in Enterobacteriaceae in avian and pig production in Europe? *International Journal of Antimicrobial Agents*, 42: 379-383.

[7] Kieffer N., Poirel L., Nordmann P., Madec J.-Y., Haenni M. (2015) Emergence of colistin resistance in *Klebsiella pneumoniae* from veterinary medicine. *Journal of Antimicrobial Chemotherapy*, 70 (4): 1265-1267.

Resistance to extended-spectrum cephalosporins (ESC): what can we learn from carriage or clinical studies?

The Resapath network collects data on clinical isolates i.e. bacteria sampled from sick animals. The isolated pathogen is supposed to be the main cause of the disease even though there is sometimes limited evidence of such a direct correlation. A causal relationship can be reliably established when there is coherence between the isolated bacterium and the disease, for example in case of pure culture of *Staphylococcus aureus* in bovine mastitis or of *Staphylococcus pseudintermedius* in a dog's pyodermatitis. And even if isolation of *E. coli* in the digestive tract of diarrheic calves does not have the same etiological significance compared to those previous examples, it is also reasonable to argue that these bacteria may present acquired resistance phenotypes selected by antibiotic treatments. Conversely, in healthy animals, isolation of resistant bacteria is supposed to be disconnected from any disease or recent antibiotic treatment.

In France, two studies were conducted in veal calves at slaughterhouse[8] (2012) and on dogs attending a referee veterinary clinic for non-infectious reasons[9] (2013). In both cases, rectal swabs were sampled and ESC-resistant bacteria were isolated on appropriate selective media. In healthy calves, the prevalence of ESC-resistant *E. coli* reached 30%. Thus, even if the antibiotic treatment selects resistant strains in the dominant flora of sick animals (the prevalence of ESC-resistant *E. coli* in newborn gastro-enteritidis is less than 10%), their clearance is probably slow and resistant bacteria persist a long time after antibiotic treatment in the sub-dominant flora. The prevalence of ESC-resistant *E. coli* was also high in healthy dogs (18.5%). Since samples were collected in a referee clinic, dogs may have received antibiotics in one or even several peripheral clinics before the time of sampling. In that case, the presence of ESC-resistant bacteria in the sub-dominant flora would reflect the persistence of these bacteria in the sub-dominant flora.

Comparisons of resistance data obtained in clinical versus carriage contexts give information on the extent of the selection of resistant isolates after antibiotic treatment, on the number of resistant bacteria colonizing a host (including sub-dominant bacterial populations), as well as the level and length of persistence of resistant strains after antibiotic treatment. Considering the diversity of contexts, angle of views and methodologies, prevalence data have to be cautiously put into perspective before drawing hasty conclusions.

A subpopulation of Staphylococcus aureus CC398: a new threat for human health?

Staphylococcus aureus strains belonging to the clonal complex (CC) 398 were first described as asymptomatic carriage in swine, before being identified in humans and a lot of animal species. Among 277 clinical isolates collected through the Resapath network from different animal sources, around 25% belonged to this CC. This prevalence is increasing between 2007-2011 (3.6%) and 2011-2013 (33.8%). Animal and human CC398 strains are all devoid of virulence genes commonly found in nosocomial isolates, but their prophage content differs.

Prophages are viruses integrated into the bacterial chromosome, which are contributing to the diversity, adaptation and evolution of these microorganisms. The φMR11-like prophage, which is usually associated to human-adapted strains, was detected in 88 animal isolates (88/277; 31.8%) and was significantly more prevalent in CC398 strains[10]. In these animal strains, the φMR11-like prophage was often associated with the φ3 prophage and other mobile genetic elements coding for potential virulence factors. Data suggest that these CC398 strains, infecting animals and presenting both prophages, possess a greater virulence capacity than human-adapted ones. Consequently, surveillance of the evolution of the different sub-types of CC398 strains in the animal and human reservoirs will be important, in order to detect the potential emergence of CC398 adapted to both animal and Humans and possessing a high virulent capacity.

8 Haenni M., Châtre P., Métayer V., Bour M., Signol E., Madec J.-Y., Gay E. (2014). Comparative prevalence and characterization of ESBL-producing *Enterobacteriaceae* in dominant *versus* subdominant enteric flora in veal calves at slaughterhouse, France. *Veterinary Microbiology*, 171: 321-327.

9 Haenni M., Saras E., Métayer V., Médaille C. and Madec J.-Y.. (2014). High prevalence of $bla_{CTX-M-1}$/IncI1/ST3 and bla_{CMY-2}/IncI1/ST2 plasmids in healthy urban dogs in France. *Antimicrobial Agents and Chemotherapy*, 58(9): 5358-62).

10 Van der Mee-Marquet N., Corvaglia A., Haenni M., Bertrand X., Franck J.-B., Kluytmans J., Girard M., Quentin R. and François P. (2014) Emergence of a novel subpopulation of CC398 *Staphylococcus aureus* infecting animals is a serious hazard for humans. *Frontiers in Microbiology*, 5: 652.

Pseudomonas aeruginosa in animals: a cumbersome bacteria

Pseudomonas aeruginosa is a major opportunistic pathogen in humans. It can also cause diseases in animals, such as otitis in dogs, mastitis in cattle or endometritis in horses. *P. aeruginosa* presents numerous intrinsic resistances, and its ability to rapidly acquire new resistances during antibiotic treatment is a frequent cause of therapeutic failures.

The population of human *P. aeruginosa* is different from the one present in the environment. This population is largely non-clonal, except for a few multi-resistant clones called «high-risk clones » that disseminated worldwide. *P. aeruginosa* also presents a non-clonal population structure in animals. Among 68 strains collected through the Resapath from sick animals, 60 different pulsotypes were obtained by Pulsed-Field Gel Electrophoresis (PFGE), which in turn belonged to 53 unique sequence types as determined by Multi-Locus Sequence Typing (MLST)[11]. Nineteen out of the 53 STs were new, suggesting the presence of clones particularly adapted to the animal host. Five multi-resistant clones associated with human outbreaks were also identified in dogs and horses, even though the 68 characterized strains globally presented very few multi-resistance profiles, except in cases of dogs' otitis.

Despite the fact that the prevalence of resistance phenotypes is still very low in animals, it is urgent to improve our surveillance system of this opportunistic pathogen. Considering the number of intrinsic resistances (among them a lot of veterinary-licensed molecules) and the high genomic plasticity of *P. aeruginosa*, antibiograms are particularly tricky to interpret for diagnostic laboratories. It would thus be of high interest to have a limited list of antibiotics that would allow the detection of all major resistance phenotypes, in order to help veterinarians to choose an appropriate treatment, with or without antibiotics. We also have to keep in mind that *P.* aeruginosa is a highly prevalent bacteria in the environment (especially in wet environments) that is rarely the primary cause of infections in animals. Indeed, this opportunistic pathogen often appears after uncomplete or inappropriate treatments. At that point, *P. aeruginosa* becomes cumbersome since secondary treatments are very limited, especially if additional resistances were acquired. In dogs' otitis for example, this highlights the importance of a thorough flushing of the auditory canal instead of the immediate use of antibiotic-containing collyrium.

[11] Haenni M., Hocquet D., Ponsin C., Cholley P., Guyeux C., Madec J.-Y., Bertrand X. (2015) Population structure and antimicrobial susceptibility of *Pseudomonas aeruginosa* from animal infections in France. BMC *Veterinary Research*, 11 (1): 9.

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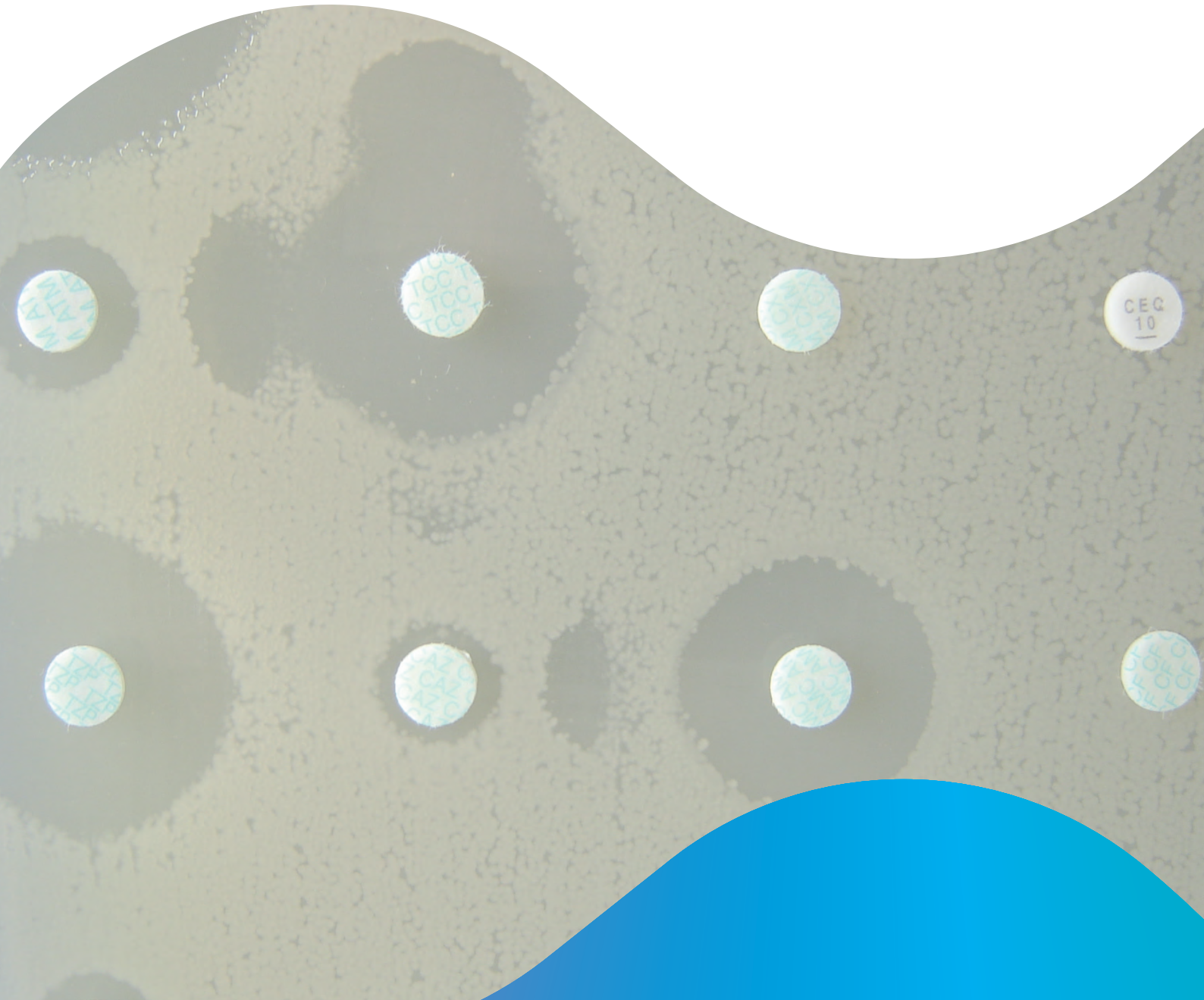
Annex 1

List of RESAPATH laboratories



Laboratories members

Laboratoire Départemental d'Analyses - BOURG EN BRESSE (01)
Eurofins Laboratoire Cœur de France - MOULINS (03)
Laboratoire Départemental Vétérinaire et Hygiène Alimentaire - GAP (05)
Laboratoire Vétérinaire Départemental - SOPHIA ANTIPOLIS (06)
Laboratoire Départemental d'Analyses - HAGNICOURT (08)
Laboratoire Départemental d'Analyses - TROYES (10)
Aveyron Labo - RODEZ (12)
Laboratoire Départemental d'Analyses - MARSEILLE (13)
LABEO Frank Duncombe - CAEN (14)
ANSES Laboratoire de pathologie équine de Dozulé – GOUSTRANVILLE (14)
Laboratoire Départemental d'Analyses et de Recherches - AURILLAC (15)
Laboratoire Départemental d'Analyses de la Charente - ANGOULEME (16)
Laboratoire Départemental d'Analyses – BOURGES (18)
Laboratoire Départemental de la Côte d'Or- DIJON (21)
LABOCEA Ploufragan - PLOUFRAGAN (22)
Labofarm - LOUDEAC (22)
Laboratoire Départemental d'Analyse et de Recherche - COULOUNIEIX CHAMIERS (24)
Laboratoire Vétérinaire Départemental - BESANCON (25)
LBAA - BOURG DE PEAGE (26)
ALCYON – LANDERNEAU (29)
LABOCEA Quimper - QUIMPER (29)
Laboratoire Départemental d'Analyses - NIMES (30)
Laboratoire Départemental Vétérinaire et des Eaux - AUCH (32)
Biolab 33 - LE HAILLAN (33)
Laboratoire Départemental Vétérinaire - MONTPELLIER (34)
Institut en Santé Agro Environnement - JAVENE (35)
Bio-Chêne Vert - CHATEAUBOURG (35)
Deltavit - JANZE (35)
Biovilaine - REDON (35)
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Laboratoire Vétérinaire Départemental - GRENOBLE (38)
Laboratoire Départemental d'Analyses - POLIGNY (39)
Laboratoire des Pyrénées et des Landes - MONT-DE-MARSAN (40)
Laboratoire Vétérinaire Départemental - MONTBRISON (42)
INOVALYS Nantes - NANTES (44)
Laboratoire Départemental d'Analyses - MENDE (48)
INOVALYS Angers - ANGERS (49)
Laboratoire HGRTS - SAINT LAURENT DE LA PLAINE (49)
LABEO Manche - SAINT LO (50)
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Laboratoire Vétérinaire et Alimentaire - MALZEVILLE (54)
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Service du Laboratoire Départemental - NEVERS (58)
Laboratoire Départemental Public - VILLENEUVE D'ASCQ (59)
LABEO Orne - ALENCON (61)
Laboratoire Départemental d'Analyses - ARRAS (62)
Laboratoire Vétérinaire et Biologique - LEMPDES (63)
Laboratoire Départemental d'Analyses - STRASBOURG (67)

Laboratoire Vétérinaire Départemental – COLMAR (68)
Laboratoire Départemental Vétérinaire - MARCY L'ETOILE (69)
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INOVALYS Le Mans - LE MANS (72)
Laboratoire Départemental d'Analyses Vétérinaires - CHAMBERY (73)
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Laboratoire Vétérinaire Départemental - MONTAUBAN (82)
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Laboratoire Départemental d'Analyses - AVIGNON (84)
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Laboratoire Vétérinaire Départemental - LIMOGES (87)
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Laboratoire de bactériologie - LCAAST – MAISONS-ALFORT (94)
VEBIO - ARCUEIL (94)

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Annex 2

Cattle

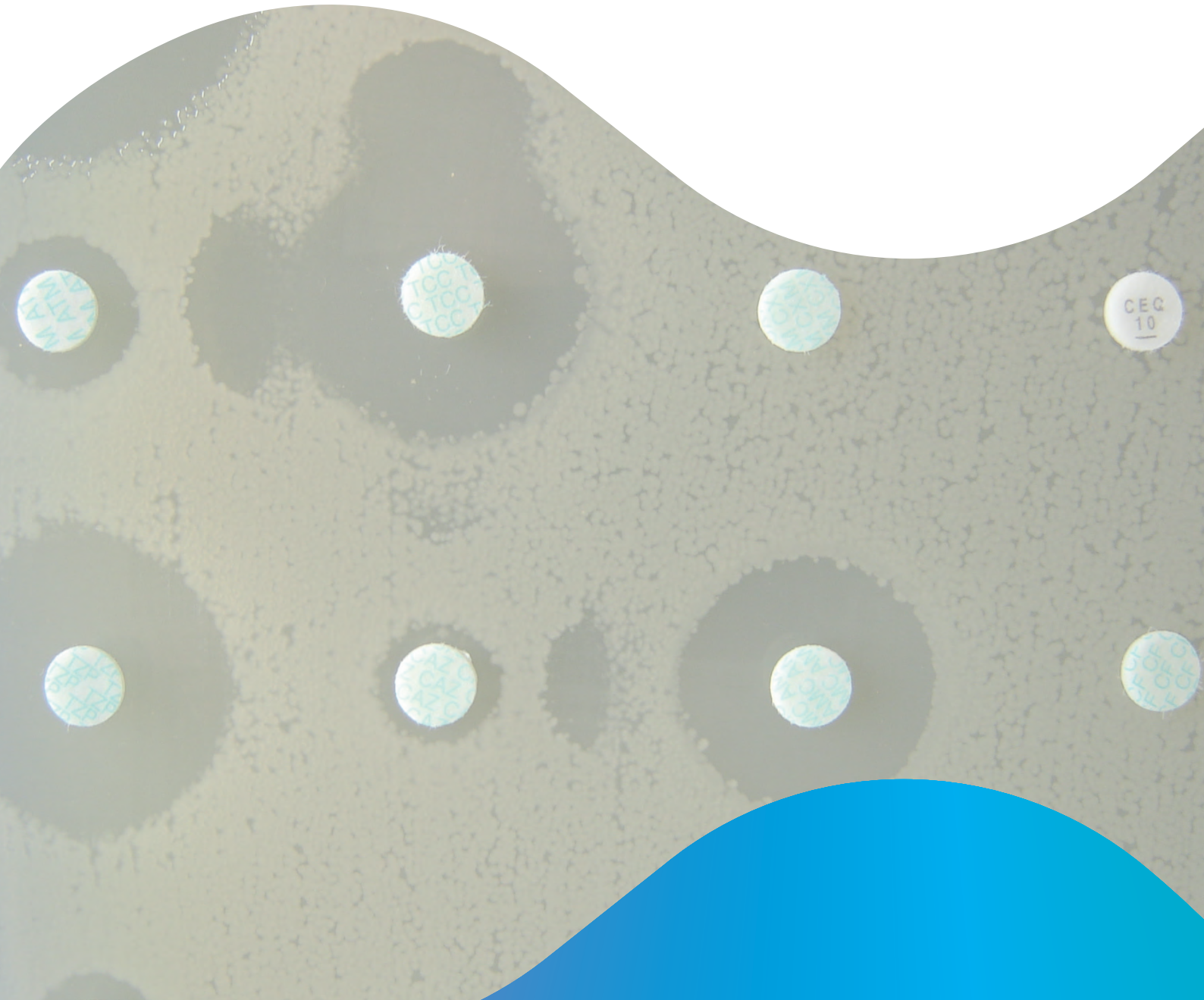
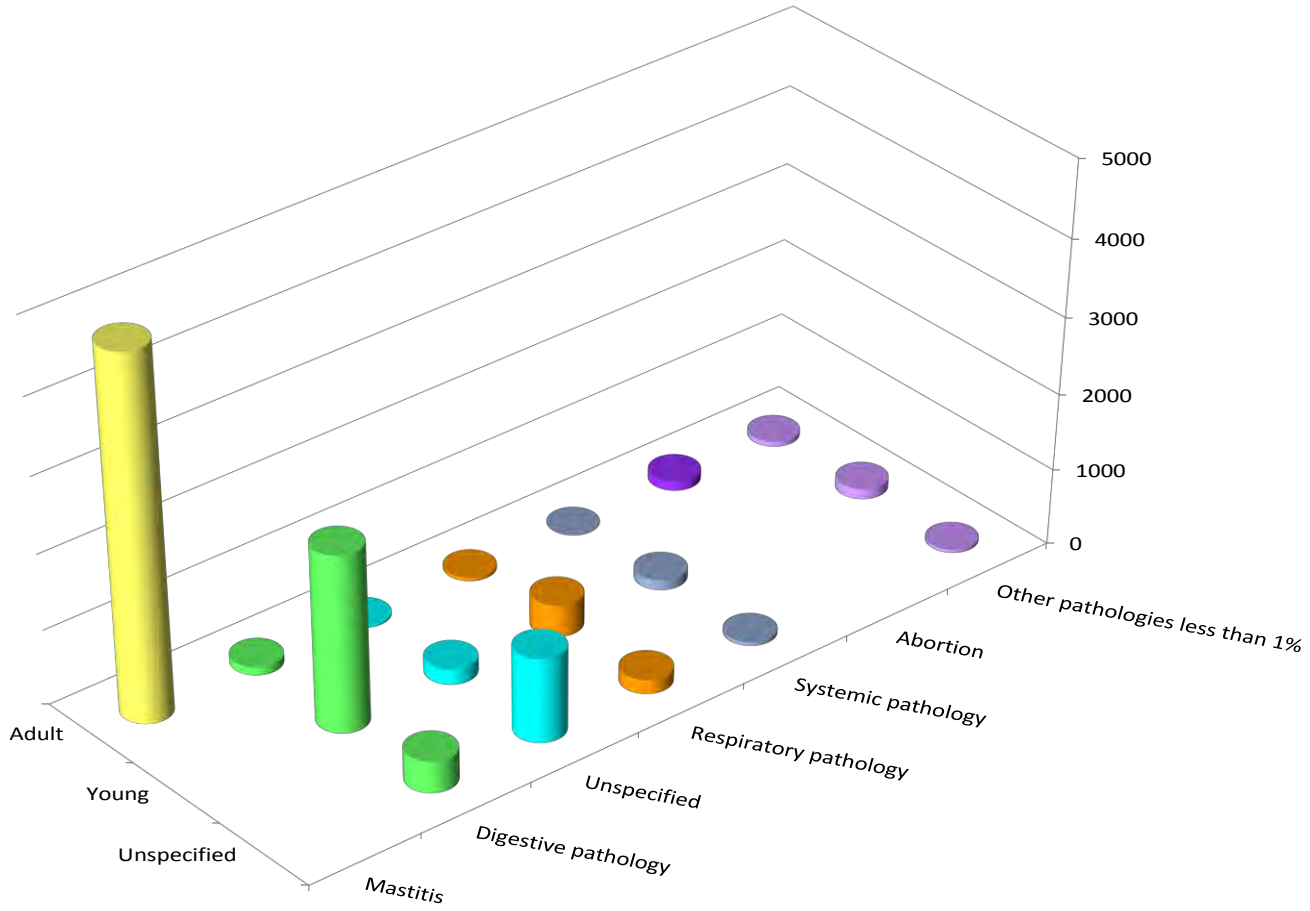


Figure 1 - Cattle 2014 – Number of antibiograms by age group and pathology

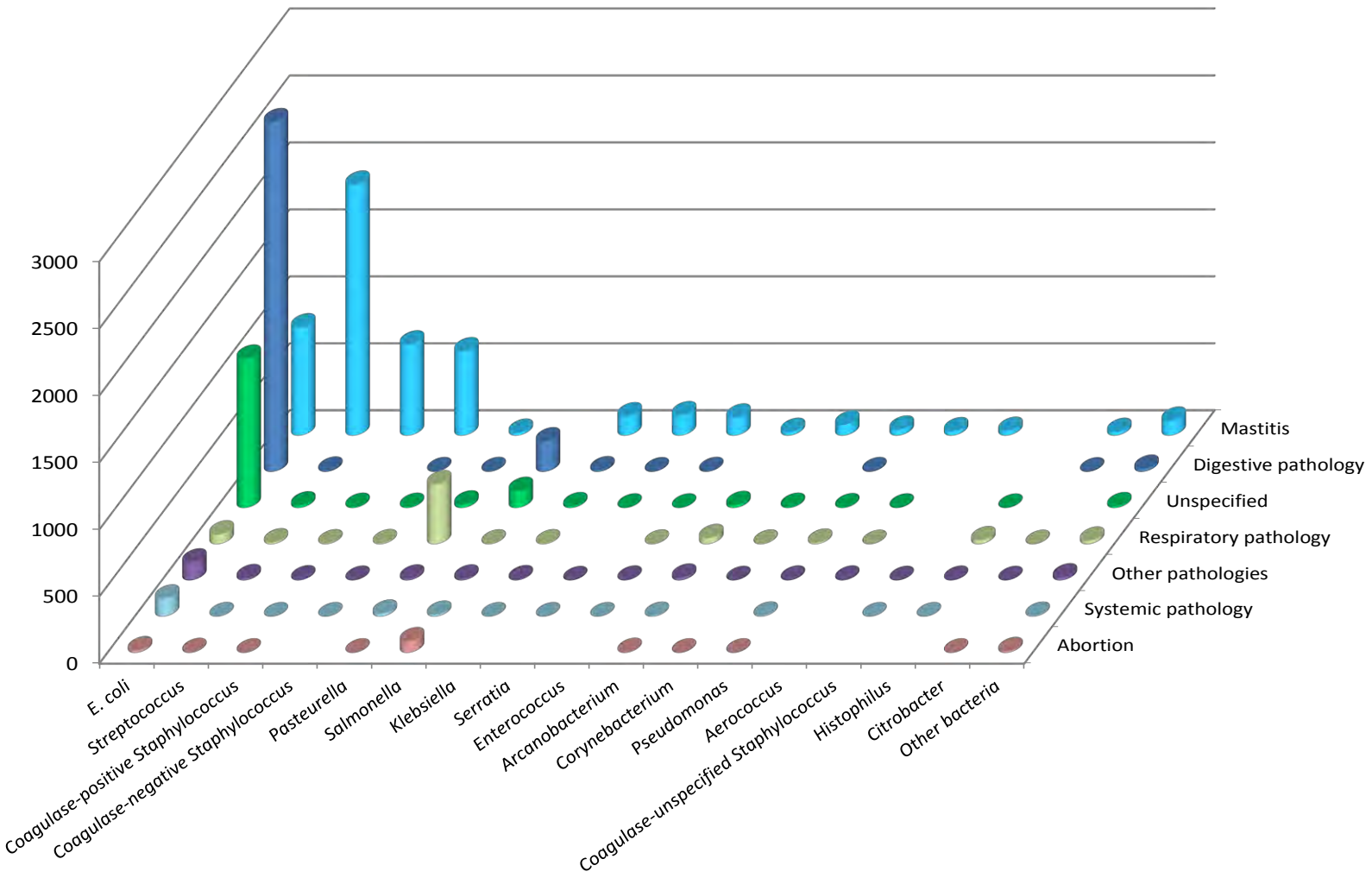


Note: *all values are detailed in table 1 (including other pathologies, representing less than 1%, grouped together)*

Table 1 - Cattle 2014 – Number of antibiograms by age group and pathology

	Age group N *(%)*			
Pathology N (%)	Adult	Young	Unspecified	**Total N *(%)***
Mastitis	4,783 *(46.62)*			**4,783 *(46.62)***
Digestive pathology	108 *(1.05)*	2,356 *(22.96)*	426 *(4.15)*	**2,890 *(28.17)***
Unspecified	25 *(0.24)*	205 *(2.00)*	1,129 *(11.00)*	**1,359 *(13.25)***
Respiratory pathology	46 *(0.45)*	427 *(4.16)*	191 *(1.86)*	**664 *(6.47)***
Systemic pathology	9 *(0.09)*	132 *(1.29)*	51 *(0.50)*	**192 *(1.87)***
Abortion	127 *(1.24)*			**127 *(1.24)***
Septicemia	4 *(0.04)*	92 *(0.90)*	5 *(0.05)*	**101 *(0.98)***
Reproductive pathology	45 *(0.44)*	3 *(0.03)*		**48 *(0.47)***
Omphalitis		16 *(0.16)*	5 *(0.05)*	**21 *(0.2)***
Skin and mucous membrane pathology	7 *(0.07)*	1 *(0.01)*	9 *(0.09)*	**17 *(0.17)***
Nervous system pathology	5 *(0.05)*	6 *(0.06)*	3 *(0.03)*	**14 *(0.14)***
Kidney and urinary tract pathology	5 *(0.05)*	3 *(0.03)*	5 *(0.05)*	**13 *(0.13)***
Arthritis	1 *(0.01)*	5 *(0.05)*	5 *(0.05)*	**11 *(0.11)***
Ocular pathology	2 *(0.02)*	2 *(0.02)*	4 *(0.04)*	**8 *(0.08)***
Cardiac pathology		4 *(0.04)*	2 *(0.02)*	**6 *(0.06)***
Otitis		1 *(0.01)*	2 *(0.02)*	**3 *(0.03)***
Oral pathology		3 *(0.03)*		**3 *(0.03)***
Total N (%)	**5,167 *(50.36)***	**3,256 *(31.73)***	**1,837 *(17.90)***	**10,260 *(100.00)***

Figure 2 - Cattle 2014 – Number of antibiograms by bacteria and pathology (all age groups included)

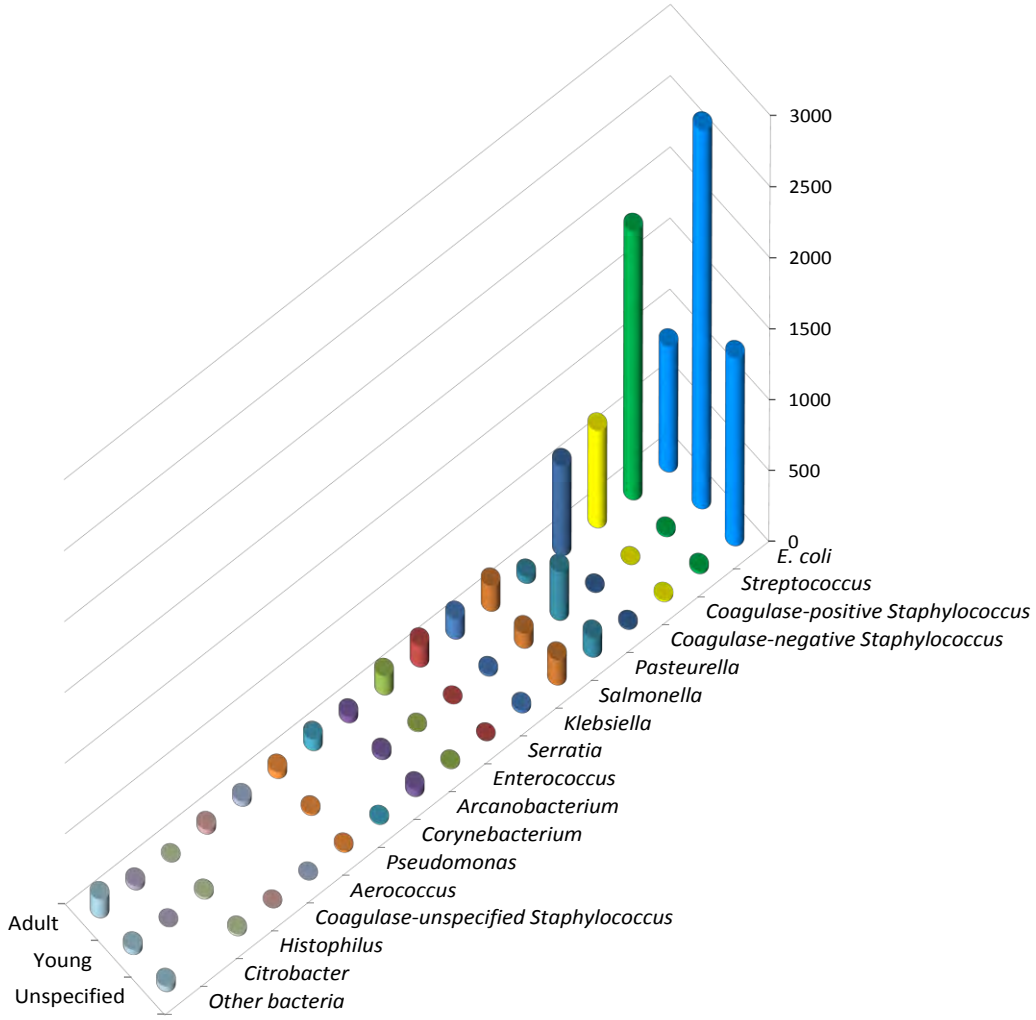


Note: *all values for pathologies >1% and bacterial groups having more than 30 occurrences are represented. Detailed values are presented in table 2 below.*

Table 2 - Cattle 2014 – Number of antibiograms by bacteria and pathology (all age groups included)

	Pathology N (%)																	
Bacteria N (%)	Mastitis	Digestive pathology	Unspecified	Respiratory pathology	Systemic pathology	Abortion	Septicemia	Reprodive pathology	Omphalitis	Skin and mucous membrane pathology	Nervous system pathology	Kidney and urinary tract pathology	Arthritis	Ocular pathology	Cardiac pathology	Otitis	Oral pathology	**Total N *(%)***
E. coli	807 *(7.87)*	2,609 *(25.43)*	1,113 *(10.85)*	71 *(0.69)*	133 *(1.30)*	17 *(0.17)*	82 *(0.80)*	13 *(0.13)*	10 *(0.10)*	3 *(0.03)*	8 *(0.08)*	9 *(0.09)*	3 *(0.03)*		3 *(0.03)*		1 *(0.01)*	**4,882 *(47.58)***
Streptococcus	1,872 *(18.25)*	7 *(0.07)*	18 *(0.18)*	12 *(0.12)*	2 *(0.02)*	4 *(0.04)*	4 *(0.04)*	8 *(0.08)*	1 *(0.01)*	1 *(0.01)*			1 *(0.01)*					**1,930 *(18.81)***
Coagulase-positive Staphylococcus	679 *(6.62)*		7 *(0.07)*	5 *(0.05)*	1 *(0.01)*	1 *(0.01)*		2 *(0.02)*		1 *(0.01)*		1 *(0.01)*	1 *(0.01)*			1 *(0.01)*		**699 *(6.81)***
Coagulase-negative Staphylococcus	628 *(6.12)*	3 *(0.03)*	7 *(0.07)*	6 *(0.06)*	1 *(0.01)*					1 *(0.01)*				2 *(0.02)*				**648 *(6.32)***
Pasteurella	20 *(0.19)*	4 *(0.04)*	25 *(0.24)*	446 *(4.35)*	21 *(0.20)*	1 *(0.01)*	6 *(0.06)*	1 *(0.01)*					1 *(0.01)*		2 *(0.02)*	1 *(0.01)*	1 *(0.01)*	**529 *(5.16)***
Salmonella		226 *(2.20)*	126 *(1.23)*	4 *(0.04)*	13 *(0.13)*	85 *(0.83)*	4 *(0.04)*	5 *(0.05)*			3 *(0.03)*							**466 *(4.54)***
Klebsiella	143 *(1.39)*	10 *(0.10)*	12 *(0.12)*	5 *(0.05)*	1 *(0.01)*		2 *(0.02)*	1 *(0.01)*		1 *(0.01)*		1 *(0.01)*	2 *(0.02)*					**178 *(1.73)***
Serratia	151 *(1.47)*	2 *(0.02)*	2 *(0.02)*		1 *(0.01)*													**156 *(1.52)***
Enterococcus	133 *(1.30)*	4 *(0.04)*	2 *(0.02)*	3 *(0.03)*	1 *(0.01)*		1 *(0.01)*			1 *(0.01)*			1 *(0.01)*			1 *(0.01)*		**147 *(1.43)***
Arcanobacterium	26 *(0.25)*		21 *(0.20)*	44 *(0.43)*	5 *(0.05)*	5 *(0.05)*		8 *(0.08)*	5 *(0.05)*	5 *(0.05)*			1 *(0.01)*					**120 *(1.17)***
Corynebacterium	80 *(0.78)*		7 *(0.07)*	3 *(0.03)*		1 *(0.01)*		1 *(0.01)*										**92 *(0.90)***
Pseudomonas	43 *(0.42)*	3 *(0.03)*	4 *(0.04)*	10 *(0.10)*	6 *(0.06)*	1 *(0.01)*		2 *(0.02)*	1 *(0.01)*	1 *(0.01)*								**71 *(0.69)***
Aerococcus	31 *(0.30)*		2 *(0.02)*	1 *(0.01)*			1 *(0.01)*	3 *(0.03)*										**38 *(0.37)***
Coagulase-unspecified Staphylococcus	34 *(0.33)*				1 *(0.01)*						1 *(0.01)*							**36 *(0.35)***
Histophilus			1 *(0.01)*	28 *(0.27)*	1 *(0.01)*			2 *(0.02)*							1 *(0.01)*			**33 *(0.32)***
Citrobacter	26 *(0.25)*	1 *(0.01)*		1 *(0.01)*		1 *(0.01)*		1 *(0.01)*										**30 *(0.29)***
Other bacteria < 30 occurences	110 *(1.07)*	21 *(0.20)*	12 *(0.12)*	25 *(0.24)*	5 *(0.05)*	11 *(0.11)*	1 *(0.01)*	1 *(0.01)*	4 *(0.04)*	3 *(0.03)*	2 *(0.02)*	2 *(0.02)*	1 *(0.01)*	6 *(0.06)*	0	0	1 *(0.01)*	**205 *(2.00)***
Total N (%)	**4,783 *(46.62)***	**2,890 *(28.17)***	**1,359 *(13.25)***	**664 *(6.47)***	**192 *(1.87)***	**127 *(1.24)***	**101 *(0.98)***	**48 *(0.47)***	**21 *(0.20)***	**17 *(0.17)***	**14 *(0.14)***	**13 *(0.13)***	**11 *(0.11)***	**8 *(0.08)***	**6 *(0.06)***	**3 *(0.03)***	**3 *(0.03)***	**10,260 *(100.00)***

Figure 3 - Cattle 2014 – Number of antibiograms by bacteria and age group



Note: *only bacterial groups having more than 30 occurrences are represented. Detailed values are presented in table 3 below.*

Table 3 - Cattle 2014 – Number of antibiograms by bacteria and age group

	Age group N (%)			
Bacteria N (%)	Adult	Young	Unspecified	**Total N *(%)***
E. coli	886 *(8.64)*	2,672 *(26.04)*	1,324 *(12.90)*	**4,882** ***(47.58)***
Streptococcus	1,896 *(18.48)*	15 *(0.15)*	19 *(0.19)*	**1,930** ***(18.81)***
Coagulase-positive Staphylococcus	686 *(6.69)*	2 *(0.02)*	11 *(0.11)*	**699** ***(6.81)***
Coagulase-negative Staphylococcus	632 *(6.16)*	6 *(0.06)*	10 *(0.10)*	**648** ***(6.32)***
Pasteurella	48 *(0.47)*	343 *(3.34)*	138 *(1.35)*	**529** ***(5.16)***
Salmonella	181 *(1.76)*	105 *(1.02)*	180 *(1.75)*	**466** ***(4.54)***
Klebsiella	144 *(1.40)*	14 *(0.14)*	20 *(0.19)*	**178** ***(1.73)***
Serratia	152 *(1.48)*	2 *(0.02)*	2 *(0.02)*	**156** ***(1.52)***
Enterococcus	134 *(1.31)*	6 *(0.06)*	7 *(0.07)*	**147** ***(1.43)***
Arcanobacterium	44 *(0.43)*	26 *(0.25)*	50 *(0.49)*	**120** ***(1.17)***
Corynebacterium	82 *(0.80)*		10 *(0.10)*	**92** ***(0.90)***
Pseudomonas	47 *(0.46)*	13 *(0.13)*	11 *(0.11)*	**71** ***(0.69)***
Aerococcus	36 *(0.35)*		2 *(0.02)*	**38** ***(0.37)***
Coagulase-unspecified Staphylococcus	35 *(0.34)*		1 *(0.01)*	**36** ***(0.35)***
Histophilus	4 *(0.04)*	15 *(0.15)*	14 *(0.14)*	**33** ***(0.32)***
Citrobacter	29 *(0.28)*	1 *(0.01)*		**30** ***(0.29)***
Other bacteria < 30 occurences	131 *(1.28)*	36 *(0.35)*	38 *(0.37)*	**205** ***(2.00)***
Total N (%)	**5,167** ***(50.36)***	**3,256** ***(31.73)***	**1,837** ***(17.90)***	**10,260** ***(100.00)***

Table 4 - Cattle 2014 – Digestive pathology – Young animals – *E. coli*: susceptibility to antibiotics (proportion) (N= 2,241)

Antibiotic	*Total (N)*	**% S**
Amoxicillin	*1,824*	**14**
Amoxicillin-Clavulanic ac.	*2,233*	**38**
Cephalexin	*1,666*	**73**
Cephalothin	*312*	**73**
Cefoxitin	*1,409*	**93**
Cefuroxime	*590*	**72**
Cefoperazone	*696*	**84**
Ceftiofur	*2,204*	**92**
Cefquinome 30 µg	*2,212*	**85**
Streptomycin 10 UI	*1,023*	**14**
Spectinomycin	*937*	**49**
Kanamycin 30 UI	*941*	**48**
Gentamicin 10 UI	*2,239*	**79**
Neomycin	*1,200*	**47**
Apramycin	*1,136*	**83**
Tetracycline	*1,877*	**21**
Chloramphenicol	*71*	**45**
Florfenicol	*1,736*	**76**
Nalidixic ac.	*1,008*	**55**
Oxolinic ac.	*857*	**55**
Flumequine	*1,236*	**56**
Enrofloxacin	*2,085*	**73**
Marbofloxacin	*1,983*	**78**
Danofloxacin	*1,004*	**71**
Sulfonamides	*287*	**20**
Trimethoprim	*75*	**59**
Trimethoprim-Sulfonamides	*2,189*	**62**

Table 5 - Cattle 2014 – Mastitis – Adults – *E. coli:* susceptibility to antibiotics (proportion) (N= 807)

Antibiotic	*Total (N)*	**% S**
Amoxicillin	*708*	**71**
Amoxicillin-Clavulanic ac.	*806*	**82**
Cephalexin	*670*	**86**
Cephalothin	*233*	**91**
Cefoxitin	*582*	**98**
Cefuroxime	*402*	**93**
Cefoperazone	*570*	**97**
Ceftazidime	*39*	**95**
Ceftiofur	*671*	**98**
Cefepime	*118*	**97**
Cefquinome 30 µg	*742*	**97**
Ertapenem	*48*	**98**
Streptomycin 10 UI	*477*	**73**
Spectinomycin	*177*	**93**
Kanamycin 30 UI	*362*	**90**
Gentamicin 10 UI	*797*	**98**
Neomycin	*540*	**91**
Apramycin	*179*	**98**
Tetracycline	*732*	**83**
Chloramphenicol	*48*	**96**
Florfenicol	*531*	**97**
Nalidixic ac.	*426*	**94**
Oxolinic ac.	*154*	**97**
Flumequine	*227*	**95**
Enrofloxacin	*719*	**97**
Marbofloxacin	*709*	**98**
Danofloxacin	*271*	**96**
Difloxacin	*37*	**100**
Sulfonamides	*95*	**82**
Trimethoprim	*78*	**87**
Trimethoprim-Sulfonamides	*729*	**91**

Table 6 - Cattle 2014 – All pathologies and age groups included – *Salmonella* Typhimurium*:* susceptibility to antibiotics (proportion) (N= 158)

Antibiotic	*Total (N)*	**% S**
Amoxicillin	*139*	**29**
Amoxicillin-Clavulanic ac.	*157*	**55**
Cephalexin	*126*	**99**
Cephalothin	*46*	**96**
Cefoxitin	*118*	**100**
Cefuroxime	*81*	**96**
Cefoperazone	*91*	**64**
Ceftiofur	*157*	**99**
Cefquinome 30 µg	*145*	**99**
Streptomycin 10 UI	*85*	**21**
Spectinomycin	*82*	**38**
Kanamycin 30 UI	*61*	**100**
Gentamicin 10 UI	*158*	**97**
Neomycin	*130*	**98**
Apramycin	*87*	**99**
Tetracycline	*144*	**17**
Chloramphenicol	*31*	**65**
Florfenicol	*131*	**53**
Nalidixic ac.	*70*	**87**
Oxolinic ac.	*64*	**97**
Flumequine	*67*	**97**
Enrofloxacin	*146*	**97**
Marbofloxacin	*151*	**100**
Danofloxacin	*88*	**97**
Sulfonamides	*47*	**21**
Trimethoprim-Sulfonamides	*157*	**99**

Table 7 - Cattle 2014 – All pathologies and age groups included – *Salmonella* Mbandaka*:* susceptibility to antibiotics (proportion) (N= 107)

Antibiotic	*Total (N)*	**% S**
Amoxicillin	*107*	**99**
Amoxicillin-Clavulanic ac.	*104*	**98**
Cephalexin	*106*	**97**
Cephalothin	*48*	**96**
Cefoxitin	*107*	**97**
Cefuroxime	*67*	**99**
Cefoperazone	*74*	**100**
Ceftiofur	*106*	**100**
Cefepime	*48*	**100**
Cefquinome 30 µg	*105*	**99**
Streptomycin 10 UI	*60*	**43**
Spectinomycin	*54*	**91**
Kanamycin 30 UI	*60*	**100**
Gentamicin 10 UI	*106*	**99**
Neomycin	*102*	**100**
Apramycin	*49*	**98**
Tetracycline	*106*	**100**
Florfenicol	*101*	**100**
Nalidixic ac.	*57*	**100**
Oxolinic ac.	*42*	**100**
Flumequine	*42*	**100**
Enrofloxacin	*102*	**100**
Marbofloxacin	*102*	**100**
Danofloxacin	*90*	**100**
Sulfonamides	*55*	**93**
Trimethoprim	*48*	**100**
Trimethoprim-Sulfonamides	*105*	**100**

Table 8 - Cattle 2014 – All pathologies and age groups included – *Salmonella* Montevideo*:* susceptibility to antibiotics (proportion) (N= 72)

Antibiotic	*Total (N)*	**% S**
Amoxicillin	*72*	**99**
Amoxicillin-Clavulanic ac.	*68*	**99**
Cephalexin	*70*	**100**
Cefoxitin	*71*	**100**
Cefuroxime	*39*	**97**
Cefoperazone	*36*	**100**
Ceftiofur	*72*	**100**
Cefquinome 30 µg	*65*	**100**
Streptomycin 10 UI	*31*	**58**
Spectinomycin	*39*	**100**
Kanamycin 30 UI	*31*	**94**
Gentamicin 10 UI	*72*	**96**
Neomycin	*64*	**98**
Apramycin	*38*	**100**
Tetracycline	*70*	**97**
Florfenicol	*71*	**100**
Nalidixic ac.	*30*	**100**
Oxolinic ac.	*35*	**100**
Flumequine	*31*	**100**
Enrofloxacin	*69*	**100**
Marbofloxacin	*61*	**100**
Danofloxacin	*49*	**100**
Trimethoprim-Sulfonamides	*72*	**100**

Table 9 - Cattle 2014 – Respiratory pathology – Youngs – *Pasteurella multocida:* susceptibility to antibiotics (proportion) (N= 169)

Antibiotic	*Total (N)*	**% S**
Amoxicillin	*159*	**99**
Amoxicillin-Clavulanic ac.	*168*	**98**
Cephalexin	*139*	**99**
Ceftiofur	*168*	**99**
Cefquinome 30 µg	*166*	**98**
Streptomycin 10 UI	*53*	**60**
Spectinomycin	*105*	**92**
Gentamicin 10 UI	*152*	**99**
Neomycin	*125*	**90**
Tetracycline	*168*	**72**
Doxycycline	*97*	**66**
Florfenicol	*167*	**100**
Nalidixic ac.	*50*	**94**
Oxolinic ac.	*110*	**75**
Flumequine	*108*	**84**
Enrofloxacin	*167*	**92**
Marbofloxacin	*150*	**100**
Danofloxacin	*123*	**89**
Trimethoprim-Sulfonamides	*166*	**93**

Table 10 - Cattle 2014 – Respiratory pathology – Youngs – *Mannheimia haemolytica:* susceptibility to antibiotics (proportion) (N= 128)

Antibiotic	*Total (N)*	**% S**
Amoxicillin	*119*	**82**
Amoxicillin-Clavulanic ac.	*125*	**98**
Cephalexin	*91*	**99**
Ceftiofur	*127*	**98**
Cefquinome 30 µg	*126*	**96**
Streptomycin 10 UI	*43*	**16**
Spectinomycin	*88*	**82**
Gentamicin 10 UI	*119*	**88**
Neomycin	*91*	**87**
Tetracycline	*119*	**68**
Doxycycline	*70*	**51**
Florfenicol	*127*	**99**
Nalidixic ac.	*43*	**88**
Oxolinic ac.	*70*	**81**
Flumequine	*86*	**79**
Enrofloxacin	*127*	**91**
Marbofloxacin	*119*	**97**
Danofloxacin	*96*	**92**
Trimethoprim-Sulfonamides	*117*	**90**

Table 11 - Cattle 2014 – Mastitis – Adults – *Serratia Marcescens:* susceptibility to antibiotics (proportion) (N= 126)

Antibiotic	*Total (N)*	**% S**
Amoxicillin-Clavulanic ac.	*126*	**18**
Cephalothin	*43*	**5**
Cefoxitin	*86*	**63**
Cefuroxime	*69*	**10**
Cefoperazone	*89*	**99**
Ceftiofur	*105*	**99**
Cefquinome 30 µg	*121*	**99**
Streptomycin 10 UI	*88*	**61**
Kanamycin 30 UI	*47*	**100**
Gentamicin 10 UI	*125*	**100**
Neomycin	*84*	**100**
Tetracycline	*120*	**8**
Florfenicol	*70*	**84**
Nalidixic ac.	*63*	**98**
Flumequine	*41*	**100**
Enrofloxacin	*114*	**100**
Marbofloxacin	*113*	**100**
Danofloxacin	*48*	**100**
Trimethoprim-Sulfonamides	*113*	**100**

Table 12 - Cattle 2014 – Mastitis – Adults – *Klebsiella pneumoniae:* susceptibility to antibiotics (proportion) (N= 80)

Antibiotic	*Total (N)*	**% S**
Amoxicillin-Clavulanic ac.	*80*	**84**
Cephalexin	*66*	**98**
Cephalothin	*35*	**94**
Cefoxitin	*62*	**94**
Cefuroxime	*50*	**90**
Cefoperazone	*58*	**97**
Ceftiofur	*63*	**98**
Cefquinome 30 µg	*73*	**100**
Streptomycin 10 UI	*53*	**77**
Kanamycin 30 UI	*31*	**100**
Gentamicin 10 UI	*76*	**97**
Neomycin	*48*	**96**
Tetracycline	*73*	**75**
Florfenicol	*48*	**92**
Nalidixic ac.	*39*	**95**
Enrofloxacin	*71*	**99**
Marbofloxacin	*76*	**100**
Trimethoprim-Sulfonamides	*68*	**97**

Table 13 - Cattle 2014 – Mastitis – Adults – *Coagulase-positive Staphylococcus*: susceptibility to antibiotics (proportion) (N= 679) including 478 identified *S. aureus strains*.

Antibiotic	*Total (N)*	**% S**
Penicillin	*671*	**67**
Cefoxitin	*595*	**94**
Oxacillin	*105*	**91**
Erythromycine	*551*	**93**
Tylosin	*419*	**97**
Spiramycin	*659*	**96**
Lincomycin	*634*	**95**
Pirlimycin	*65*	**100**
Streptomycin 10 UI	*466*	**88**
Kanamycin 30 UI	*420*	**98**
Gentamicin 10 UI	*649*	**97**
Neomycin	*364*	**99**
Tetracycline	*656*	**92**
Florfenicol	*257*	**99**
Enrofloxacin	*593*	**98**
Marbofloxacin	*637*	**99**
Danofloxacin	*184*	**99**
Trimethoprim-Sulfonamides	*553*	**99**
Rifampicin	*222*	**97**

Table 14 - Cattle 2014 – Mastitis – Adults – Coagulase-negative *Staphycoccus*: susceptibility to antibiotics (proportion) (N= 628)

Antibiotic	*Total (N)*	**% S**
Penicillin	*624*	**70**
Cefoxitin	*527*	**96**
Oxacillin	*147*	**90**
Erythromycine	*521*	**88**
Tylosin	*354*	**93**
Spiramycin	*603*	**92**
Lincomycin	*594*	**85**
Pirlimycin	*40*	**93**
Streptomycin 10 UI	*354*	**88**
Kanamycin 30 UI	*377*	**99**
Gentamicin 10 UI	*602*	**99**
Neomycin	*442*	**98**
Tetracycline	*603*	**86**
Florfenicol	*277*	**98**
Enrofloxacin	*499*	**99**
Marbofloxacin	*540*	**99**
Danofloxacin	*252*	**97**
Trimethoprim-Sulfonamides	*492*	**99**
Rifampicin	*253*	**96**

Table 15 - Cattle 2014 – Mastitis – Adults – *Streptococcus uberis*: susceptibility to antibiotics (proportion) (N= 1,561)

Antibiotic	*Total (N)*	**% S**
Ampicillin	*160*	**98**
Oxacillin	*1,200*	**80**
Erythromycine	*1,357*	**78**
Tylosin	*957*	**69**
Spiramycin	*1,523*	**77**
Lincomycin	*1,440*	**78**
Pristinamycin	*41*	**88**
Streptomycin 500 µg	*1,344*	**85**
Kanamycin 1000 µg	*1,107*	**95**
Gentamicin 500 µg	*1,345*	**98**
Tetracycline	*1,333*	**79**
Doxycycline	*137*	**89**
Chloramphenicol	*68*	**96**
Florfenicol	*640*	**91**
Enrofloxacin	*1,338*	**61**
Marbofloxacin	*1,212*	**81**
Danofloxacin	*253*	**45**
Trimethoprim-Sulfonamides	*1,419*	**89**
Rifampicin	*466*	**55**

Table 16 - Cattle 2014 – Mastitis – Adults – *Streptococcus dysgalactiae:* susceptibility to antibiotics (proportion) (N= 206)

Antibiotic	*Total (N)*	**% S**
Oxacillin	*149*	**97**
Erythromycine	*182*	**85**
Tylosin	*112*	**84**
Spiramycin	*199*	**89**
Lincomycin	*191*	**91**
Streptomycin 500 µg	*191*	**94**
Kanamycin 1000 µg	*151*	**95**
Gentamicin 500 µg	*190*	**99**
Tetracycline	*185*	**25**
Florfenicol	*78*	**97**
Enrofloxacin	*165*	**45**
Marbofloxacin	*154*	**83**
Trimethoprim-Sulfonamides	*179*	**96**
Rifampicin	*64*	**69**

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Annex 3

Sheep

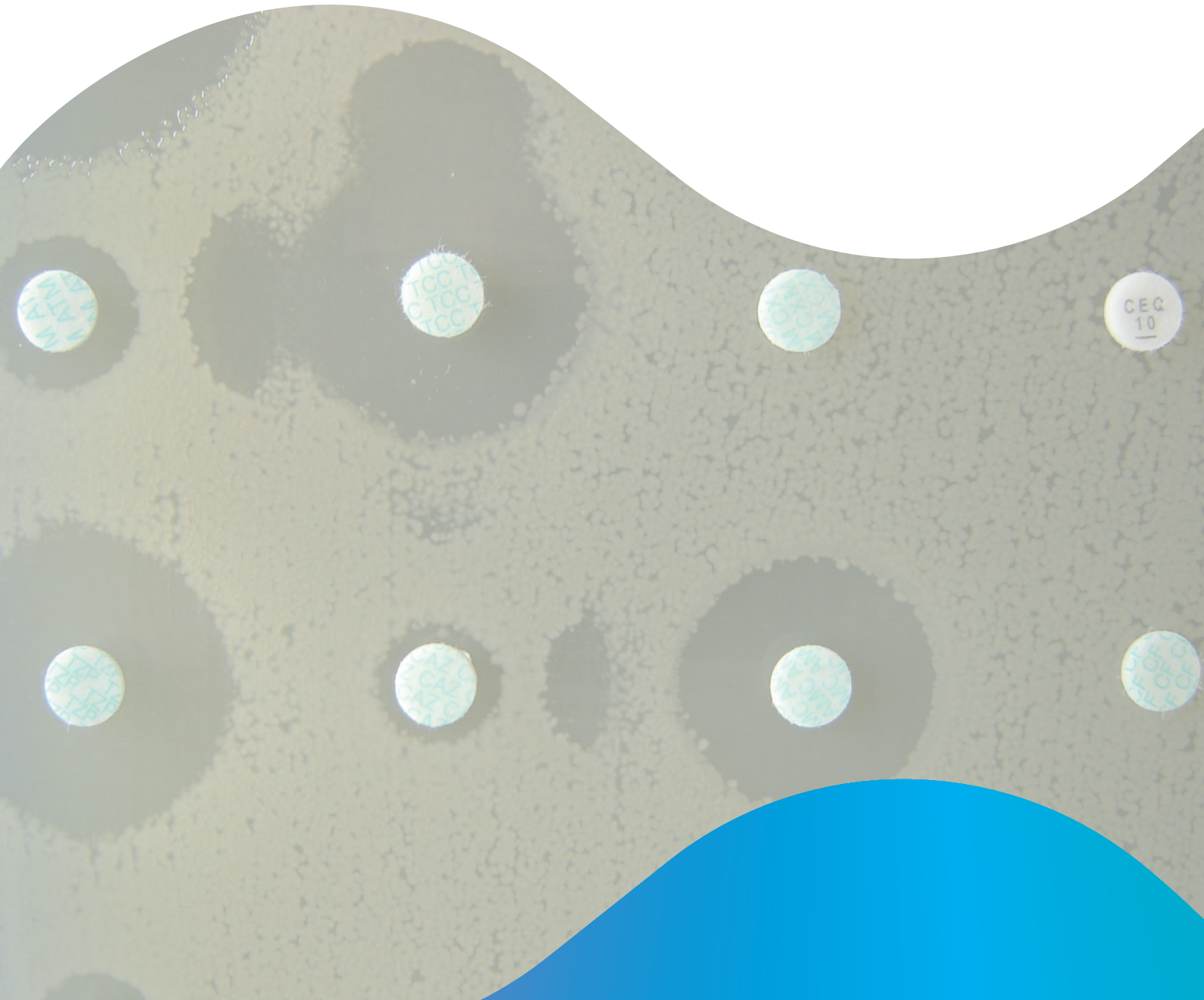


Figure 1 - Sheep 2014 – Number of antibiograms by age group and pathology

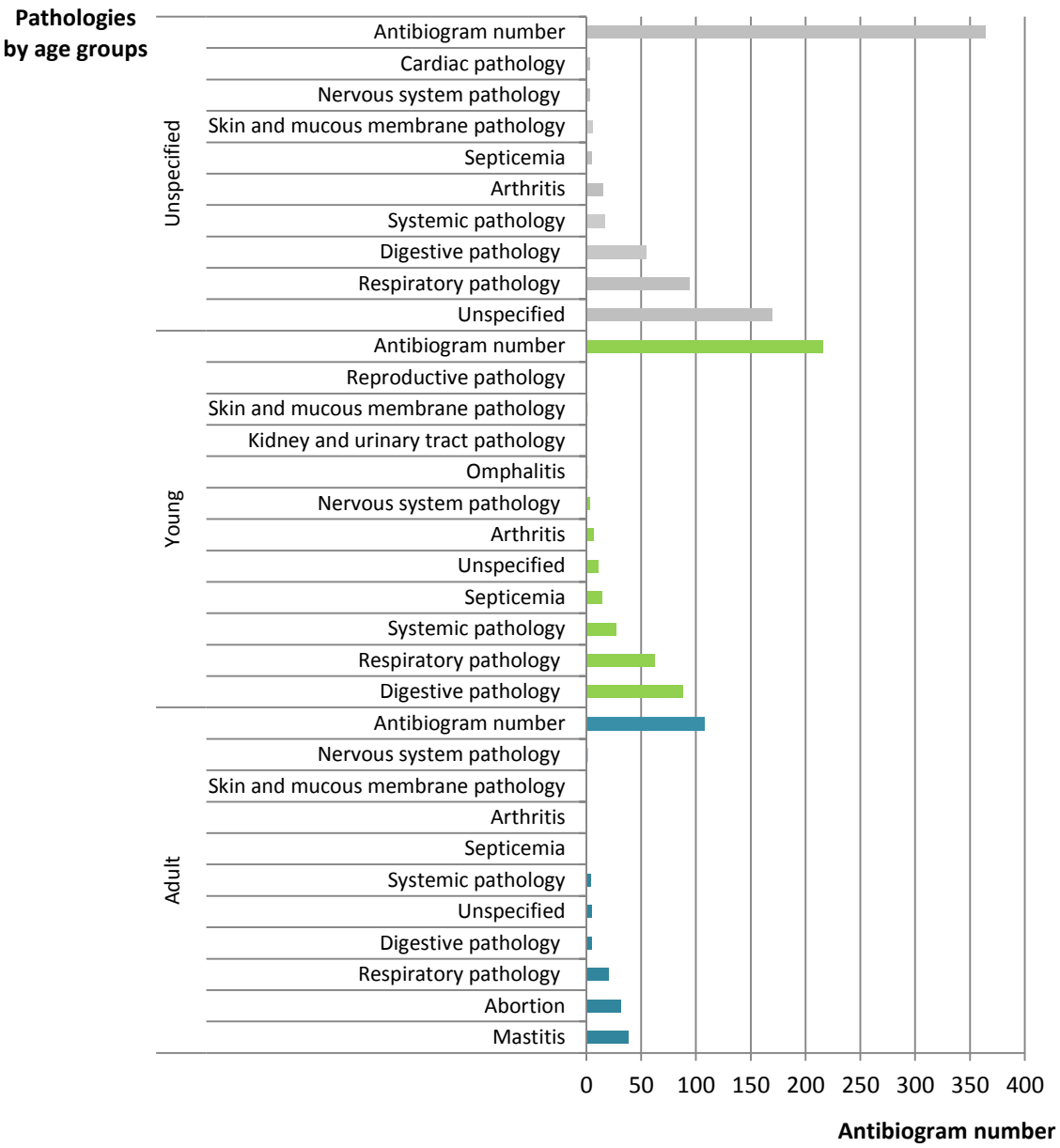
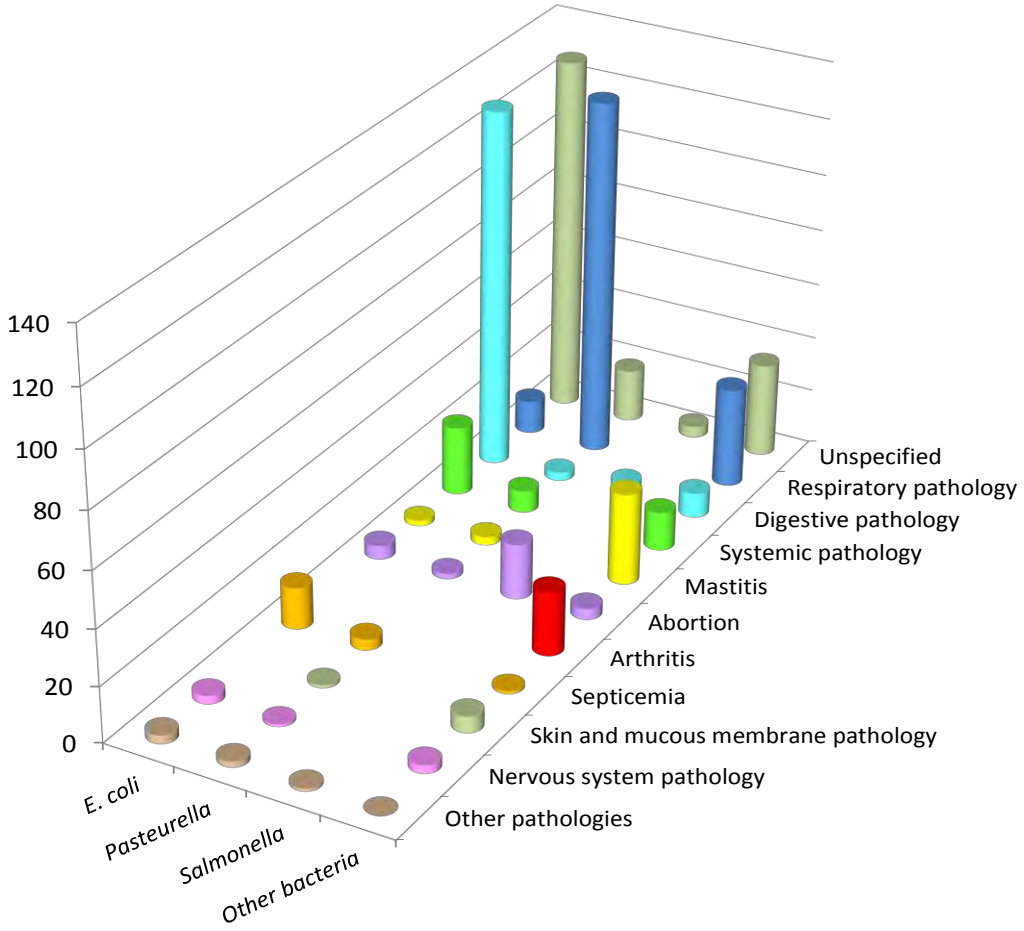


Table 1 - Sheep 2014 – Number of antibiograms by age group and pathology

	Age group N *(%)*			
Pathology N (%)	Unspecified	Young	Adult	**Total N *(%)***
Unspecified	169 *(24.6)*	11 *(1.6)*	5 *(0.7)*	**185 *(26.9)***
Respiratory pathology	94 *(13.7)*	62 *(9.0)*	20 *(2.9)*	**176 *(25.6)***
Digestive pathology	54 *(7.9)*	88 *(12.8)*	5 *(0.7)*	**147 *(21.4)***
Systemic pathology	16 *(2.3)*	27 *(3.9)*	4 *(0.6)*	**47 *(6.8)***
Mastitis			38 *(5.5)*	**38 *(5.5)***
Abortion			31 *(4.5)*	**31 *(4.5)***
Arthritis	15 *(2.2)*	7 *(1.0)*	1 *(0.1)*	**23 *(3.3)***
Septicemia	5 *(0.7)*	14 *(2.0)*	1 *(0.1)*	**20 *(2.9)***
Skin and mucous membrane pathology	5 *(0.7)*	1 *(0.1)*	1 *(0.1)*	**7 *(1.0)***
Nervous system pathology	3 *(0.4)*	3 *(0.4)*	1 *(0.1)*	**7 *(1.0)***
Cardiac pathology	3 *(0.4)*			**3 *(0.4)***
Omphalitis		1 *(0.1)*		**1 *(0.1)***
Reproductive pathology		1 *(0.1)*		**1 *(0.1)***
Kidney and urinary tract pathology		1 *(0.1)*		**1 *(0.1)***
Total N (%)	**364 *(53.0)***	**216 *(31.4)***	**107 *(15.6)***	**687 *(100.0)***

Figure 2 - Sheep 2014 – Number of antibiograms by bacterial group and pathology



Note: *all values for pathologies >1% and bacterial groups having more than 30 occurrences are represented . Detailed values are presented in table 2 below.*

Table 2 - Sheep 2014 – Number of antibiograms by bacterial group and pathology

	Pathology N (%)														
Bacteria N (%)	Unspecified	Respiratory pathology	Digestive pathology	Systemic pathology	Mastitis	Abortion	Arthritis	Septicemia	Nervous system pathology	Skin and mucous membrane pathology	Cardiac pathology	Omphalitis	Reproductive pathology	Kidney and urinary tract pathology	**Total N *(%)***
E. coli	128 *(18.6)*	12 *(1.7)*	129 *(18.8)*	25 *(3.6)*	2 *(0.3)*	5 *(0.7)*		15 *(2.2)*	3 *(0.4)*		1 *(0.1)*	1 *(0.1)*		1 *(0.1)*	**322** ***(46.9)***
Pasteurella	19 *(2.8)*	128 *(18.6)*	3 *(0.4)*	8 *(1.2)*	3 *(0.4)*	2 *(0.3)*		4 *(0.6)*	1 *(0.1)*	1 *(0.1)*	2 *(0.3)*				**171** ***(24.9)***
Salmonella	4 *(0.6)*		6 *(0.9)*			20 *(2.9)*							1 *(0.1)*		**31** ***(4.5)***
Other bacteria < 30 occurences	34 *(4.9)*	36 *(5.2)*	9 *(1.3)*	14 *(2.0)*	33 *(4.8)*	4 *(0.6)*	23 *(3.3)*	1 *(0.1)*	6 *(0.8)*	3 *(0.4)*	0	0	0	0	**163** ***(23.7)***
Total N (%)	**185** ***(26.9)***	**176** ***(25.6)***	**147** ***(21.4)***	**47** ***(6.8)***	**38** ***(5.5)***	**31** ***(4.5)***	**23** ***(3.3)***	**20** ***(2.9)***	**7** ***(1.0)***	**7** ***(1.0)***	**3** ***(0.4)***	**1** ***(0.1)***	**1** ***(0.1)***	**1** ***(0.1)***	**687** ***(100.0)***

Table 3 - Sheep 2014 – Digestive pathology – *E. coli:* susceptibility to antibiotics (proportion) (N= 129)

Antibiotic	*Total (N)*	**% S**
Amoxicillin	*111*	**50**
Amoxicillin-Clavulanic ac.	*129*	**75**
Cephalexin	*104*	**89**
Cefoxitin	*85*	**96**
Ceftiofur	*124*	**98**
Cefquinome 30 µg	*109*	**97**
Streptomycin 10 UI	*78*	**33**
Spectinomycin	*64*	**72**
Gentamicin 10 UI	*128*	**94**
Neomycin	*99*	**78**
Tetracycline	*111*	**35**
Florfenicol	*110*	**90**
Nalidixic ac.	*90*	**82**
Oxolinic ac.	*37*	**84**
Flumequine	*90*	**81**
Enrofloxacin	*116*	**87**
Marbofloxacin	*80*	**90**
Danofloxacin	*31*	**97**
Sulfonamides	*32*	**44**
Trimethoprim-Sulfonamides	*123*	**71**

Table 4 - Sheep 2014 – Respiratory pathology – All age groups – *Mannheimia haemolytica:* susceptibility to antibiotics (proportion) (N= 83)

Antibiotic	*Total (N)*	**% S**
Amoxicillin	*76*	**97**
Amoxicillin-Clavulanic ac.	*83*	**98**
Cephalexin	*68*	**99**
Cefoxitin	*53*	**100**
Ceftiofur	*80*	**100**
Cefquinome 30 µg	*80*	**99**
Streptomycin 10 UI	*69*	**68**
Spectinomycin	*57*	**84**
Gentamicin 10 UI	*83*	**83**
Neomycin	*73*	**81**
Tetracycline	*81*	**95**
Florfenicol	*82*	**100**
Nalidixic ac.	*78*	**88**
Flumequine	*68*	**85**
Enrofloxacin	*81*	**94**
Marbofloxacin	*36*	**94**
Trimethoprim-Sulfonamides	*81*	**95**

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Annex 4

Goats

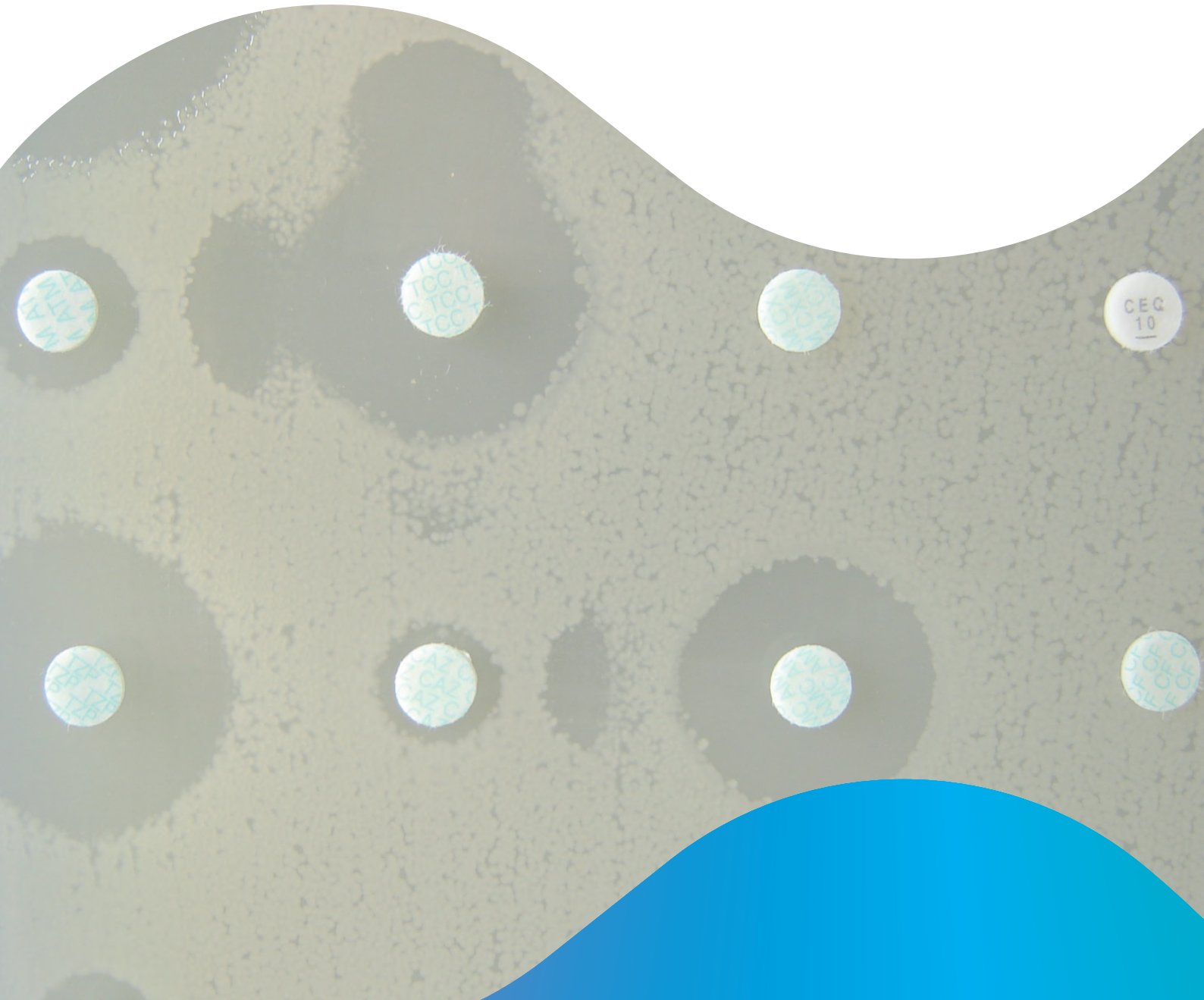


Figure 1 - Goats 2014 – Number of antibiograms by age group and pathology

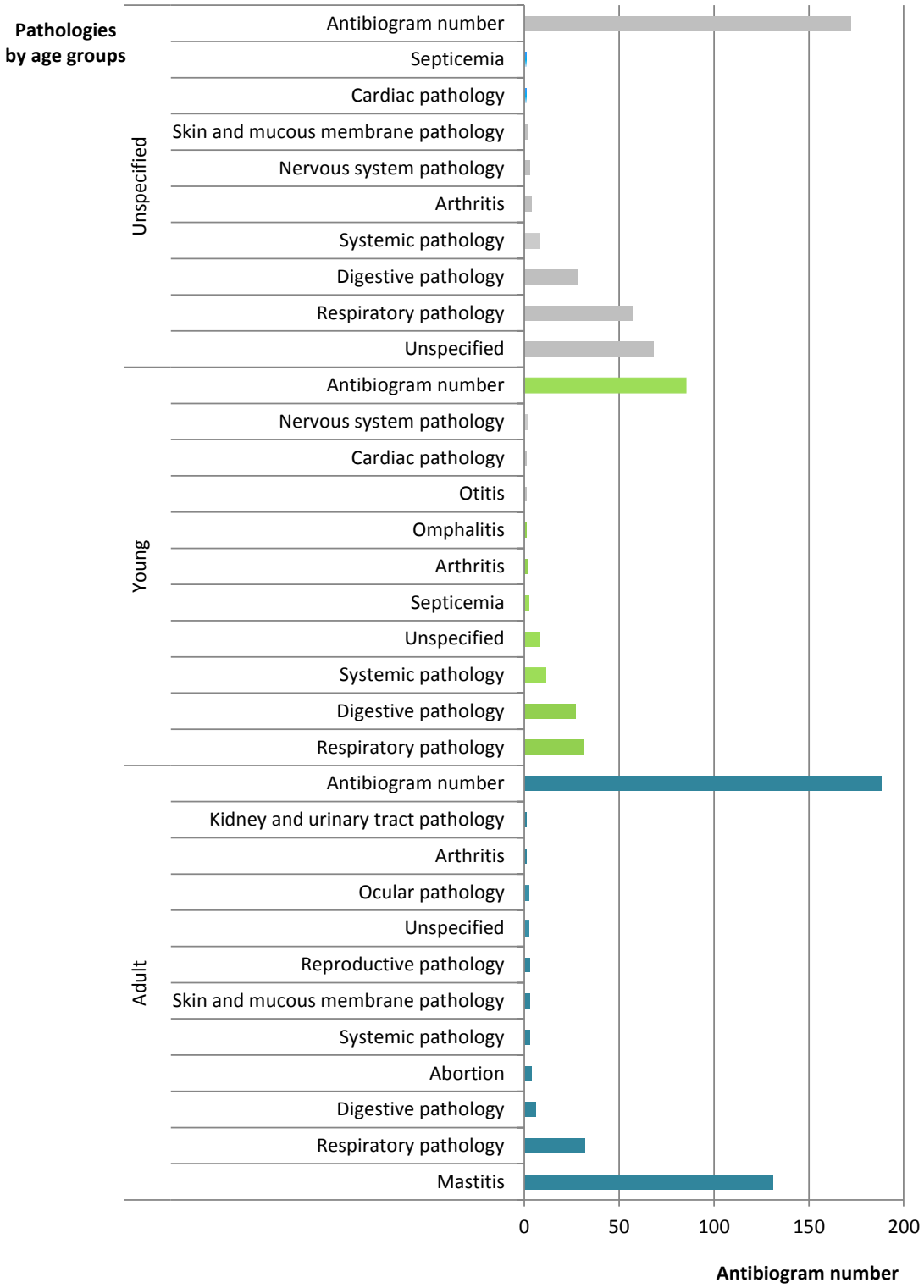
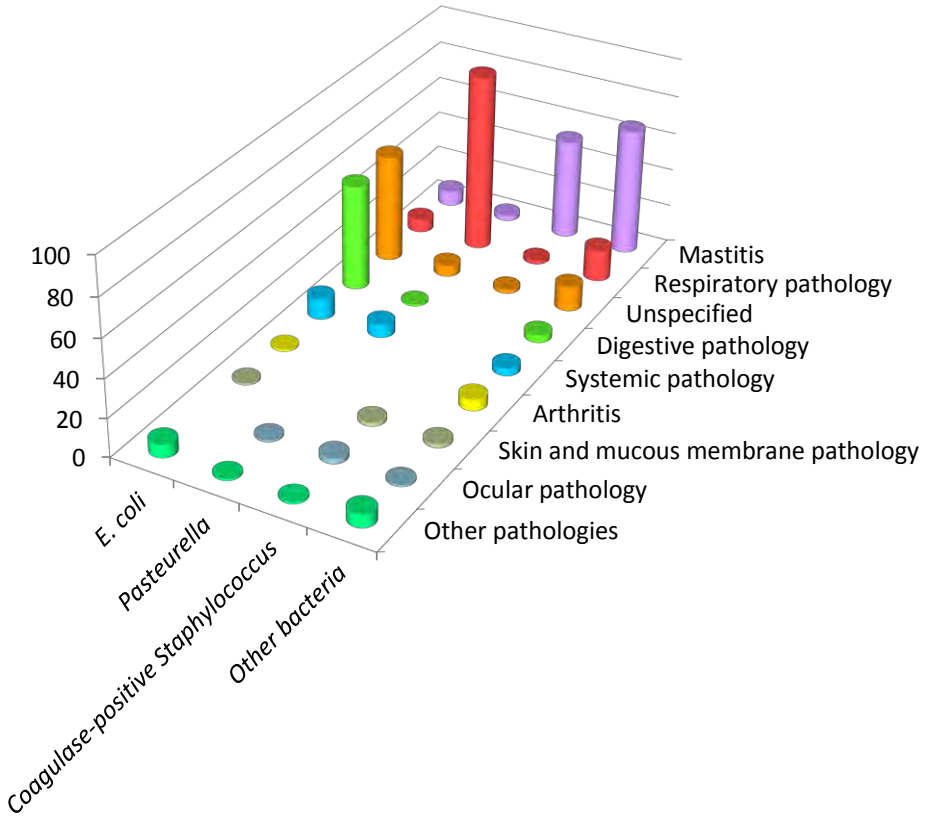


Table 1 - Goats 2014 – Number of antibiograms by age group and pathology

	Age group N *(%)*			
Bacteria N (%)	Adult	Unspecified	Young	**Total N *(%)***
Mastitis	131 *(29.4)*			**131 *(29.4)***
Respiratory pathology	32 *(7.2)*	57 *(12.8)*	31 *(7.0)*	**120 *(27)***
Unspecified	2 *(0.4)*	68 *(15.3)*	8 *(1.8)*	**78 *(17.5)***
Digestive pathology	6 *(1.3)*	28 *(6.3)*	27 *(6.1)*	**61 *(13.7)***
Systemic pathology	3 *(0.7)*	8 *(1.8)*	11 *(2.5)*	**22 *(4.9)***
Arthritis	1 *(0.2)*	4 *(0.9)*	2 *(0.4)*	**7 *(1.6)***
Skin and mucous membrane pathology	3 *(0.7)*	2 *(0.4)*		**5 *(1.1)***
Ocular pathology	2 *(0.4)*	3 *(0.7)*		**5 *(1.1)***
Abortion	4 *(0.9)*			**4 *(0.9)***
Septicemia		1 *(0.2)*	2 *(0.4)*	**3 *(0.7)***
Reproductive pathology	3 *(0.7)*			**3 *(0.7)***
Cardiac pathology		1 *(0.2)*	1 *(0.2)*	**2 *(0.4)***
Nervous system pathology			1 *(0.2)*	**1 *(0.2)***
Kidney and urinary tract pathology	1 *(0.2)*			**1 *(0.2)***
Omphalitis			1 *(0.2)*	**1 *(0.2)***
Otitis			1 *(0.2)*	**1 *(0.2)***
Total N *(%)*	**188 *(42.2)***	**172 *(38.7)***	**85 *(19.1)***	**445 *(100.0)***

Figure 2 - Goats 2014 – Number of antibiograms by bacterial group and pathology



Note: *all values for pathologies >1% and bacterial groups having more than 30 occurrences are represented . Detailed values are presented in table 2 below.*

Table 2 - Goats 2014 – Number of antibiograms by bacterial group and pathology

	Pathology N (%)																
Bacteria N (%)	Mastitis	Respiratory pathology	Unspecified	Digestive pathology	Systemic pathology	Arthritis	Skin and mucous membrane pathology	Ocular pathology	Abortion	Septicemia	Reproductive pathology	Cardiac pathology	Nervous system pathology	Kidney and urinary tract pathology	Omphalitis	Otitis	**Total N *(%)***
E. coli	8 *(1.8)*	7 *(1.6)*	57 *(12.8)*	56 *(12.6)*	11 *(2.5)*	1 *(0.2)*	1 *(0.2)*		2 *(0.4)*	2 *(0.4)*	1 *(0.2)*	1 *(0.2)*				1 *(0.2)*	**148** ***(33.3)***
Pasteurella	3 *(0.7)*	94 *(21.1)*	6 *(1.3)*	1 *(0.2)*	7 *(1.6)*			1 *(0.2)*					1 *(0.2)*				**113** ***(25.4)***
Coagulase-positive Staphylococcus	53 *(11.9)*	2 *(0.4)*	2 *(0.4)*				2 *(0.4)*	3 *(0.7)*			1 *(0.2)*						**63** ***(14.2)***
Other bacteria < 30 occurences	67 *(15.1)*	17 *(3.8)*	13 *(2.9)*	4 *(0.9)*	4 *(0.9)*	6 *(1.3)*	2 *(0.4)*	1 *(0.2)*	2 *(0.4)*	1 *(0.2)*	1 *(0.2)*	1 *(0.2)*	0	1 *(0.2)*	1 *(0.2)*	0	**121** ***(27.2)***
Total N *(%)*	**131** ***(29.4)***	**120** ***(27.0)***	**78** ***(17.5)***	**61** ***(13.7)***	**22** ***(4.9)***	**7** ***(1.6)***	**5** ***(1.1)***	**5** ***(1.1)***	**4** ***(0.9)***	**3** ***(0.7)***	**3** ***(0.7)***	**2** ***(0.4)***	**1** ***(0.2)***	**1** ***(0.2)***	**1** ***(0.2)***	**1** ***(0.2)***	**445** ***(100.0)***

Table 3 - Goats 2014 – All pathologies and age groups included – *E. coli:* susceptibility to antibiotics (proportion) (N= 148)

Antibiotic	*Total (N)*	**% S**
Amoxicillin	*139*	**31**
Amoxicillin-Clavulanic ac.	*142*	**78**
Cephalexin	*129*	**91**
Cephalothin	*54*	**93**
Cefoxitin	*113*	**98**
Cefuroxime	*62*	**94**
Cefoperazone	*71*	**96**
Ceftiofur	*144*	**97**
Cefepime	*48*	**100**
Cefquinome 30 µg	*143*	**97**
Ertapenem	*43*	**100**
Streptomycin 10 UI	*94*	**43**
Spectinomycin	*75*	**83**
Kanamycin 30 UI	*69*	**84**
Gentamicin 10 UI	*145*	**91**
Neomycin	*117*	**84**
Tetracycline	*135*	**31**
Florfenicol	*130*	**91**
Nalidixic ac.	*109*	**70**
Flumequine	*46*	**67**
Enrofloxacin	*131*	**80**
Marbofloxacin	*115*	**85**
Danofloxacin	*70*	**76**
Trimethoprim-Sulfonamides	*132*	**69**

Table 4 - Goats 2014 – All pathologies and age groups included –*Pasteurella*: susceptibility to antibiotics (proportion) (N= 113)

Antibiotic	*Total (N)*	**% S**
Amoxicillin	*110*	**95**
Amoxicillin-Clavulanic ac.	*99*	**97**
Cephalexin	*96*	**99**
Cefoxitin	*44*	**98**
Cefoperazone	*34*	**94**
Ceftiofur	*111*	**99**
Cefquinome 30 µg	*107*	**95**
Streptomycin 10 UI	*89*	**45**
Spectinomycin	*44*	**70**
Kanamycin 30 UI	*42*	**71**
Gentamicin 10 UI	*100*	**92**
Neomycin	*66*	**70**
Tetracycline	*96*	**91**
Florfenicol	*83*	**98**
Nalidixic ac.	*71*	**92**
Flumequine	*52*	**92**
Enrofloxacin	*89*	**97**
Marbofloxacin	*78*	**97**
Danofloxacin	*53*	**94**
Trimethoprim-Sulfonamides	*93*	**96**

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Annex 5

Pigs

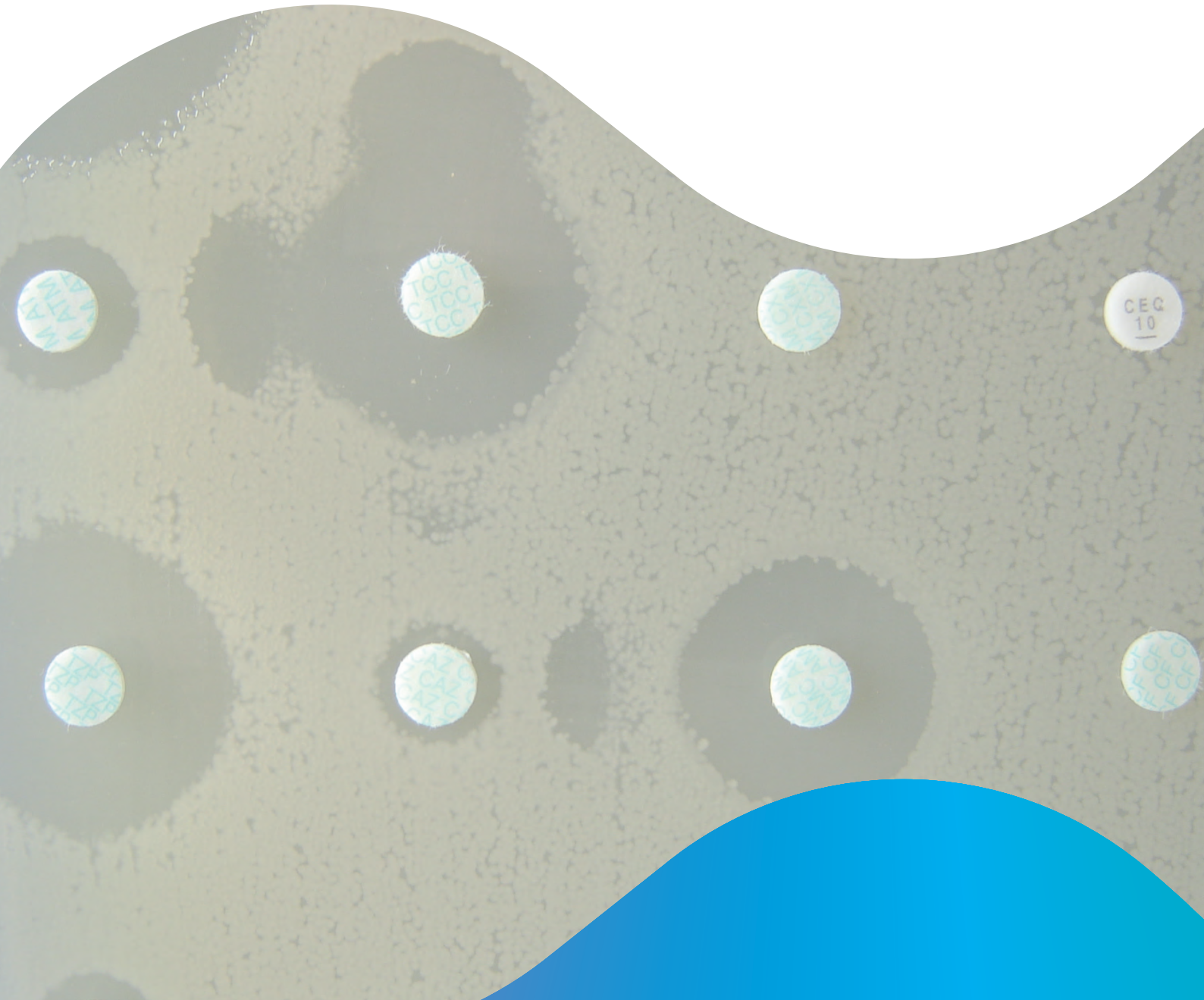


Figure 1 - Pigs 2014 – Antibiogram proportions by animal category

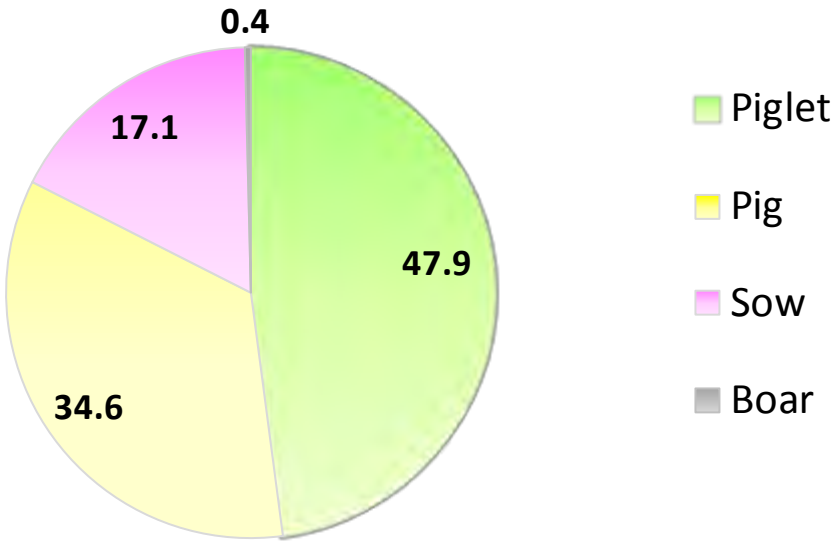


Figure 2 - Pigs 2014 – Number of antibiograms by pathology and animal category

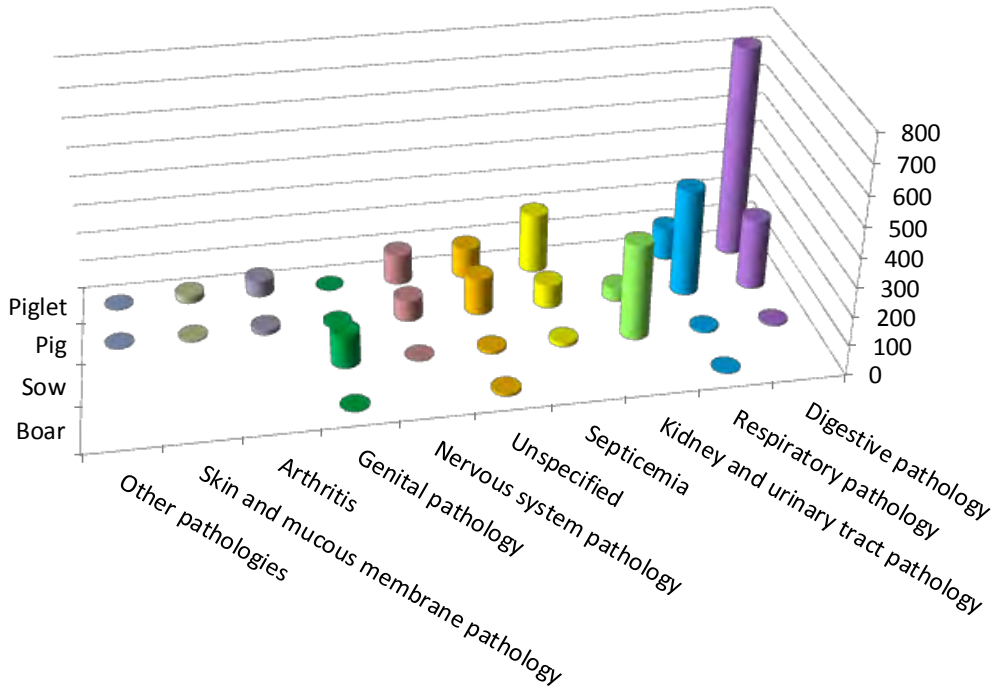
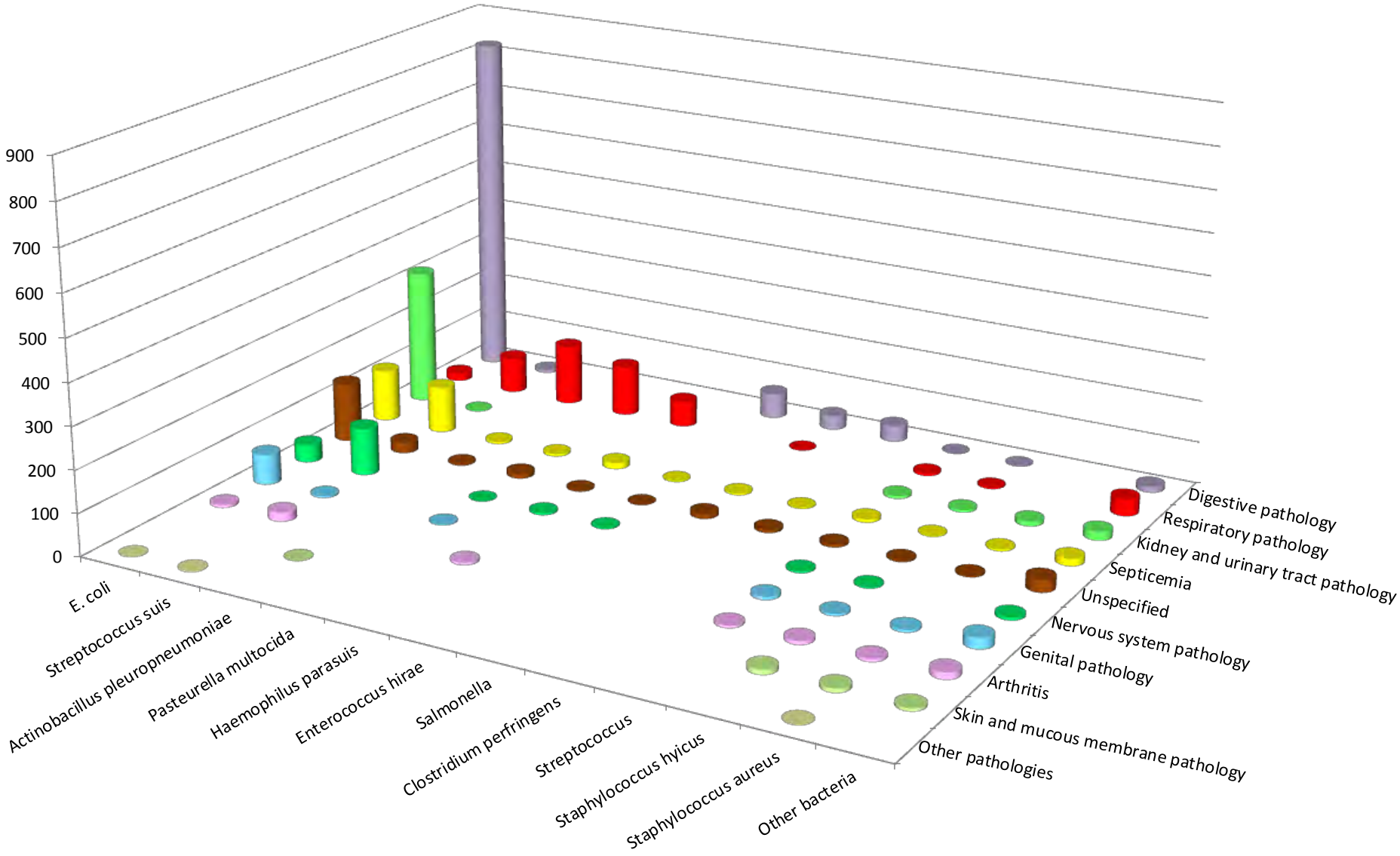


Table 1 - Pigs 2014 – Number of antibiograms by pathology and animal category

	Pathology N *(%)*										
Age group or physiological stage N (%)	Digestive pathology	Respiratory pathology	Kidney and urinary tract pathology	Septicemia	Unspecified	Nervous system pathology	Genital pathology	Arthritis	Skin and mucous membrane pathology	Others	**Total N** *(%)*
Piglet	733	111		206	106	105	1	56	25	2	**1,345**
	(26.11)	*(3.95)*		*(7.34)*	*(3.78)*	*(3.74)*	*(0.04)*	*(2.00)*	*(0.89)*	*(0.07)*	***(47.92)***
Pig	244	370	45	82	126	73	7	16	5	2	**970**
	(8.69)	*(13.18)*	*(1.60)*	*(2.92)*	*(4.49)*	*(2.60)*	*(0.25)*	*(0.57)*	*(0.18)*	*(0.07)*	***(34.56)***
Sow	6	7	329	14	9	1	115				**481**
	(0.21)	*(0.25)*	*(11.72)*	*(0.50)*	*(0.32)*	*(0.04)*	*(4.10)*				***(17.14)***
Boar		1			9		1				**11**
		(0.04)			*(0.32)*		*(0.04)*				***(0.39)***
Total N *(%)*	**983**	**489**	**374**	**302**	**250**	**179**	**124**	**72**	**30**	**4**	**2,807**
	(35.02)	*(17.42)*	*(13.32)*	*(10.76)*	*(8.91)*	*(6.38)*	*(4.42)*	*(2.57)*	*(1.07)*	*(0.14)*	***(100.00)***

Figure 3 - Pigs 2014 – Number of antibiograms by bacteria and pathology



Note: *only values for pathologies and bacteria having more than 30 occurrences are represented. Detailed values are presented in table 2 below*

Table 2 - Pigs 2014 – Number of antibiograms by bacteria and pathology

	Pathology N *(%)*										
Bacteria N *(%)*	Digestive pathology	Respiratory pathology	Kidney and urinary tract pathology	Septicemia	Unspecified	Nervous system pathology	Genital pathology	Arthritis	Skin and mucous membrane pathology	Other pathologies	**Total N *(%)***
E. coli	826 *(29.43)*	20 *(0.71)*	326 *(11.61)*	125 *(4.45)*	142 *(5.06)*	43 *(1.53)*	73 *(2.60)*	7 *(0.25)*		1 *(0.04)*	**1,563 *(55.68)***
Streptococcus suis	7 *(0.25)*	87 *(3.10)*	2 *(0.07)*	112 *(3.99)*	26 *(0.93)*	114 *(4.06)*	4 *(0.14)*	21 *(0.75)*		2 *(0.07)*	**375 *(13.36)***
Actinobacillus pleuropneumoniae		146 *(5.20)*		5 *(0.18)*	4 *(0.14)*				1 *(0.04)*		**156 *(5.56)***
Pasteurella multocida		122 *(4.35)*		6 *(0.21)*	12 *(0.43)*	1 *(0.04)*	2 *(0.07)*				**143 *(5.09)***
Haemophilus parasuis		63 *(2.24)*		15 *(0.53)*	3 *(0.11)*	5 *(0.18)*		6 *(0.21)*			**92 *(3.28)***
Enterococcus hirae	61 *(2.17)*			2 *(0.07)*	1 *(0.04)*	2 *(0.07)*					**66 *(2.35)***
Salmonella	34 *(1.21)*	1 *(0.04)*		4 *(0.14)*	12 *(0.43)*						**51 *(1.82)***
Clostridium perfringens	39 *(1.39)*			2 *(0.07)*	7 *(0.25)*						**48 *(1.71)***
Streptococcus	1 *(0.04)*	6 *(0.21)*	7 *(0.25)*	8 *(0.29)*	6 *(0.21)*	4 *(0.14)*	8 *(0.29)*	6 *(0.21)*			**46 *(1.64)***
Staphylococcus hyicus	1 *(0.04)*	3 *(0.11)*	6 *(0.21)*	2 *(0.07)*	4 *(0.14)*	3 *(0.11)*	5 *(0.18)*	9 *(0.32)*	12 *(0.43)*		**45 *(1.60)***
Staphylococcus aureus			12 *(0.43)*	4 *(0.14)*	3 *(0.11)*		6 *(0.21)*	7 *(0.25)*	10 *(0.36)*	1 *(0.04)*	**43 *(1.53)***
Other bacteria < 30 occurrences	14 *(0.50)*	41 *(1.46)*	21 *(0.75)*	17 *(0.61)*	30 *(1.07)*	7 *(0.25)*	26 *(0.93)*	16 *(0.57)*	7 *(0.25)*		**179 *(6.38)***
Total N (%)	**983** *(35.02)*	**489** *(17.42)*	**374** *(13.32)*	**302** *(10.76)*	**250** *(8.91)*	**179** *(6.38)*	**124** *(4.42)*	**72** *(2.57)*	**30** *(1.07)*	**4** *(0.14)*	**2,807 *(100.00)***

Table 3 - Pigs 2014 – All pathologies and age groups included – *E. coli*: susceptibility to antibiotics (proportion) (N= 1,563)

Antibiotic	*Total (N)*	**% S**
Amoxicillin	*1,525*	**43**
Amoxicillin-Clavulanic ac.	*1,243*	**86**
Cephalexin	*805*	**91**
Cephalothin	*316*	**91**
Cefoxitin	*1,088*	**98**
Cefuroxime	*283*	**94**
Cefoperazone	*249*	**98**
Ceftiofur	*1,527*	**97**
Cefquinome 30 µg	*506*	**97**
Ceftazidime	*181*	**98**
Spectinomycin	*1,161*	**63**
Gentamicin 10 UI	*1,440*	**87**
Neomycin	*1,276*	**81**
Apramycin	*1,215*	**86**
Tetracycline	*1,275*	**28**
Florfenicol	*1,447*	**89**
Nalidixic ac.	*513*	**73**
Oxolinic ac.	*1,148*	**73**
Flumequine	*852*	**75**
Enrofloxacin	*1,436*	**89**
Marbofloxacin	*1,299*	**91**
Danofloxacin	*337*	**90**
Trimethoprim	*452*	**43**
Trimethoprim-Sulfonamides	*1,545*	**47**

Table 4 - Pigs 2014 – Digestive pathology – Piglets (post-weaning included) – *E. coli*: susceptibility to antibiotics (proportion) (N= 607)

Antibiotic	*Total (N)*	**% S**
Amoxicillin	*586*	**39**
Amoxicillin-Clavulanic ac.	*499*	**87**
Cephalexin	*317*	**91**
Cephalothin	*151*	**91**
Cefoxitin	*465*	**97**
Ceftiofur	*605*	**97**
Cefquinome 30 µg	*133*	**98**
Spectinomycin	*537*	**59**
Gentamicin 10 UI	*600*	**85**
Neomycin	*594*	**79**
Apramycin	*584*	**85**
Tetracycline	*481*	**28**
Florfenicol	*590*	**85**
Nalidixic ac.	*159*	**72**
Oxolinic ac.	*437*	**68**
Flumequine	*315*	**68**
Enrofloxacin	*604*	**88**
Marbofloxacin	*480*	**89**
Trimethoprim	*224*	**42**
Trimethoprim-Sulfonamides	*592*	**45**

Table 5 - Pigs 2014 – Kidney and urinary tract pathology – Sows – *E. coli*: susceptibility to antibiotics (proportion) (N= 283)

Antibiotic	*Total (N)*	**% S**
Amoxicillin	*278*	**42**
Amoxicillin-Clavulanic ac.	*208*	**76**
Cephalexin	*119*	**88**
Cefoxitin	*122*	**98**
Ceftiofur	*272*	**97**
Gentamicin 10 UI	*204*	**95**
Tetracycline	*254*	**33**
Florfenicol	*240*	**92**
Nalidixic ac.	*134*	**72**
Oxolinic ac.	*255*	**73**
Enrofloxacin	*211*	**86**
Marbofloxacin	*281*	**89**
Trimethoprim-Sulfonamides	*283*	**47**

Table 6 - Pigs 2014 – All pathologies included – *Actinobacillus pleuropneumoniae*: susceptibility to antibiotics (proportion) (N= 156)

Antibiotic	*Total (N)*	**% S**
Amoxicillin	*154*	**97**
Amoxicillin-Clavulanic ac.	*128*	**99**
Ceftiofur	*155*	**99**
Tilmicosin	*153*	**99**
Tetracycline	*153*	**86**
Florfenicol	*154*	**99**
Enrofloxacin	*155*	**99**
Marbofloxacin	*132*	**100**
Trimethoprim-Sulfonamides	*155*	**94**

Table 7 - Pigs 2014 – All pathologies included – *Pasteurella multocida*: susceptibility to antibiotics (proportion) (N= 143)

Antibiotic	*Total (N)*	**% S**
Amoxicillin	*136*	**99**
Amoxicillin-Clavulanic ac.	*113*	**99**
Ceftiofur	*143*	**100**
Tilmicosin	*139*	**98**
Tetracycline	*143*	**94**
Florfenicol	*141*	**99**
Flumequine	*102*	**99**
Enrofloxacin	*143*	**100**
Marbofloxacin	*110*	**100**
Trimethoprim-Sulfonamides	*143*	**88**

Table 8 - Pigs 2014 – All pathologies included – *Streptococcus suis*: susceptibility to antibiotics (proportion) (N= 375)

Antibiotic	*Total (N)*	**% S**
Amoxicillin	*357*	**100**
Oxacillin	*212*	**99**
Erythromycine	*303*	**30**
Tylosin	*360*	**23**
Spiramycin	*369*	**27**
Lincomycin	*369*	**26**
Streptomycin 500 µg	*235*	**93**
Kanamycin 1000 µg	*142*	**98**
Gentamicin 500 µg	*302*	**99**
Tetracycline	*280*	**18**
Trimethoprim-Sulfonamides	*373*	**90**

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Poultry

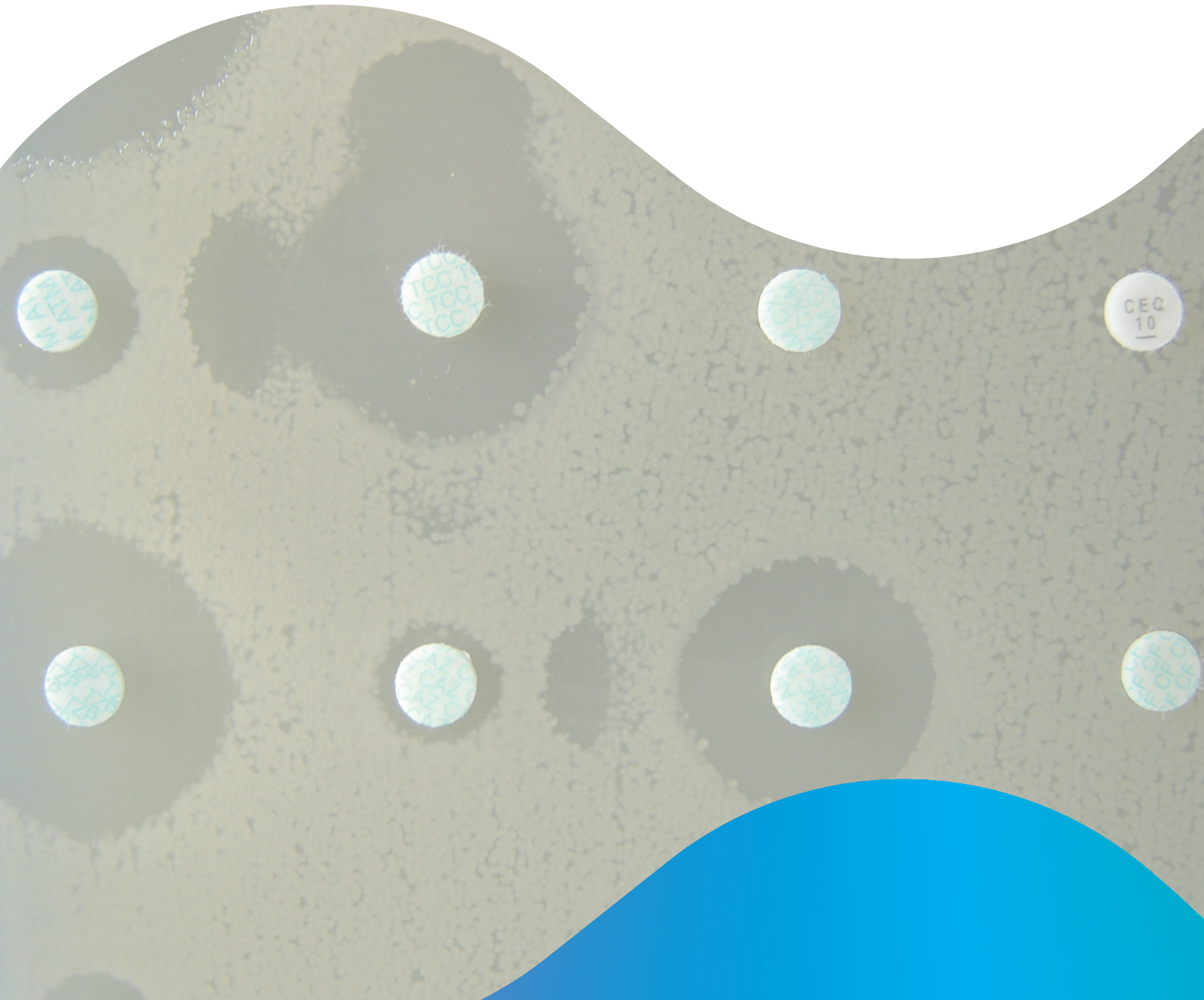
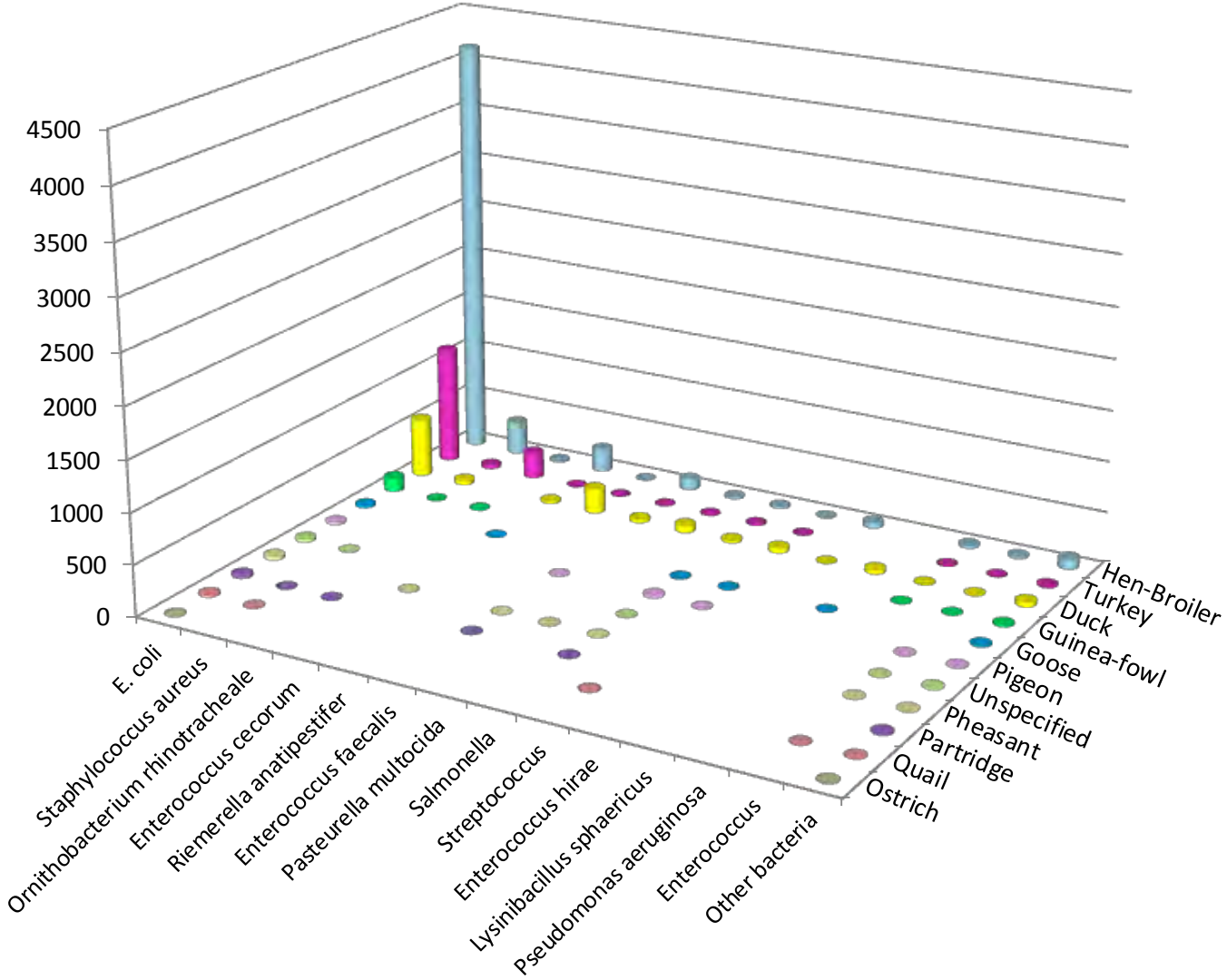


Figure 1 - Poultry 2014 – Number of antibiograms by bacteria and animal



Note: *only values for bacterial groups having more than 30 occurrences are represented. Detailed values are presented in table 1 below*

Table 1 - Poultry 2014 – Number of antibiograms by bacteria and animal

	Animal species N *(%)*											
Bacteria N *(%)*	Hen-broiler	Turkey	Duck	Guinea-fowl	Goose	Pigeon	Unspecified	Pheasant	Partridge	Quail	Ostrich	**Total N *(%)***
E. coli	4,151 *(50.60)*	1,163 *(14.18)*	585 *(7.13)*	140 *(1.71)*	25 *(0.30)*	22 *(0.27)*	29 *(0.35)*	33 *(0.40)*	28 *(0.34)*	21 *(0.26)*	5 *(0.06)*	**6,202** ***(75.61)***
Staphylococcus aureus	331 *(4.04)*	34 *(0.41)*	41 *(0.50)*	5 *(0.06)*			4 *(0.05)*		1 *(0.01)*	5 *(0.06)*		**421** ***(5.13)***
Ornithobacterium rhinotracheale	15 *(0.18)*	262 *(3.19)*		8 *(0.10)*					1 *(0.01)*			**286** ***(3.49)***
Enterococcus cecorum	230 *(2.80)*	2 *(0.02)*	21 *(0.26)*		1 *(0.01)*			1 *(0.01)*				**255** ***(3.11)***
Riemerella anatipestifer	3 *(0.04)*	2 *(0.02)*	247 *(3.01)*									**252** ***(3.07)***
Enterococcus faecalis	105 *(1.28)*	5 *(0.06)*	34 *(0.41)*			1 *(0.01)*		1 *(0.01)*	1 *(0.01)*			**147** ***(1.79)***
Pasteurella multocida	18 *(0.22)*	5 *(0.06)*	74 *(0.90)*					3 *(0.04)*				**100** ***(1.22)***
Salmonella	17 *(0.21)*	11 *(0.13)*	23 *(0.28)*		5 *(0.06)*	19 *(0.23)*	2 *(0.02)*	2 *(0.02)*	2 *(0.02)*			**81** ***(0.99)***
Streptococcus	5 *(0.06)*	3 *(0.04)*	49 *(0.60)*		6 *(0.07)*	3 *(0.04)*				2 *(0.02)*		**68** ***(0.83)***
Enterococcus hirae	55 *(0.67)*		2 *(0.02)*									**57** ***(0.69)***
Lysinibacillus sphaericus			41 *(0.50)*		1 *(0.01)*							**42** ***(0.51)***
Pseudomonas aeruginosa	26 *(0.32)*	5 *(0.06)*	6 *(0.07)*	1 *(0.01)*								**38** ***(0.46)***
Enterococcus	18 *(0.22)*	2 *(0.02)*	5 *(0.06)*	1 *(0.01)*		2 *(0.02)*	1 *(0.01)*	1 *(0.01)*		1 *(0.01)*		**31** ***(0.38)***
Other bacteria *< 30 occurrences*	100 *(1.22)*	17 *(0.21)*	46 *(0.56)*	14 *(0.17)*	13 *(0.16)*	3 *(0.04)*	11 *(0.13)*	5 *(0.06)*	10 *(0.12)*	2 *(0.02)*	2 *(0.02)*	**223** ***(2.72)***
Total N (%)	**5,074** ***(61.86)***	**1,511** ***(18.42)***	**1,174** ***(14.31)***	**169** ***(2.06)***	**51** ***(0.62)***	**50** ***(0.61)***	**47** ***(0.57)***	**46** ***(0.56)***	**43** ***(0.52)***	**31** ***(0.38)***	**7** ***(0.09)***	**8,203** ***(100.00)***

Table 2 - Hens and broilers 2014 – All pathologies included - *E. coli*: susceptibility to antibiotics (proportion) (N= 4,151)

Antibiotic	*Total (N)*	**% S**
Ampicillin	*503*	**69**
Amoxicillin	*4,116*	**68**
Amoxicillin-Clavulanic ac.	*2,791*	**95**
Cephalexin	*718*	**89**
Cephalothin	*1,954*	**95**
Cefoxitin	*2,588*	**98**
Cefuroxime	*265*	**89**
Cefoperazone	*246*	**90**
Ceftiofur	*3,754*	**95**
Cefquinome 30 µg	*588*	**95**
Spectinomycin	*1,094*	**87**
Gentamicin 10 UI	*3,005*	**94**
Neomycin	*2,365*	**98**
Apramycin	*2,217*	**98**
Tetracycline	*3,185*	**55**
Florfenicol	*2,674*	**99**
Nalidixic ac.	*2,284*	**69**
Oxolinic ac.	*1,102*	**64**
Flumequine	*3,890*	**66**
Enrofloxacin	*4,118*	**95**
Marbofloxacin	*532*	**95**
Danofloxacin	*220*	**87**
Difloxacin	*200*	**56**
Sulfonamides	*142*	**56**
Trimethoprim	*2,033*	**82**
Trimethoprim-Sulfonamides	*4,122*	**81**

Table 3 - Laying hens (table eggs and hatching eggs) 2014 – All pathologies included - *E. coli*: susceptibility to antibiotics (proportion) (N= 1,854)

Antibiotic	*Total (N)*	**% S**
Amoxicillin	*1,826*	**75**
Amoxicillin-Clavulanic ac.	*1,364*	**96**
Cephalothin	*1,237*	**96**
Cefoxitin	*1,336*	**98**
Ceftiofur	*1,781*	**97**
Spectinomycin	*253*	**82**
Gentamicin 10 UI	*1,402*	**92**
Neomycin	*1,259*	**97**
Apramycin	*1,215*	**98**
Tetracycline	*1,435*	**63**
Florfenicol	*1,288*	**99**
Nalidixic ac.	*1,337*	**72**
Oxolinic ac.	*149*	**71**
Flumequine	*1,803*	**69**
Enrofloxacin	*1,828*	**96**
Trimethoprim	*1,258*	**85**
Trimethoprim-Sulfonamides	*1,828*	**86**

Table 4 - Broilers 2014 – All pathologies included - *E. coli*: susceptibility to antibiotics (proportion) (N= 1,959)

Antibiotic	*Total (N)*	**% S**
Amoxicillin	*1,953*	**63**
Amoxicillin-Clavulanic ac.	*1,164*	**94**
Cephalexin	*382*	**92**
Cephalothin	*674*	**92**
Cefoxitin	*1,022*	**99**
Ceftiofur	*1,641*	**94**
Spectinomycin	*630*	**88**
Gentamicin 10 UI	*1,339*	**95**
Neomycin	*862*	**98**
Apramycin	*810*	**97**
Tetracycline	*1,482*	**50**
Florfenicol	*1,138*	**99**
Nalidixic ac.	*881*	**66**
Oxolinic ac.	*762*	**64**
Flumequine	*1,908*	**64**
Enrofloxacin	*1,955*	**94**
Trimethoprim	*760*	**76**
Trimethoprim-Sulfonamides	*1,956*	**76**

Table 5 - Turkeys 2014 – All pathologies included - *E. coli*: susceptibility to antibiotics (proportion) (N= 1,163)

Antibiotic	*Total (N)*	**% S**
Amoxicillin	*1,163*	**53**
Amoxicillin-Clavulanic ac.	*722*	**91**
Cephalexin	*315*	**89**
Cephalothin	*316*	**99**
Cefoxitin	*620*	**99**
Ceftiofur	*1,102*	**99**
Cefquinome 30 µg	*150*	**98**
Spectinomycin	*292*	**86**
Gentamicin 10 UI	*640*	**97**
Neomycin	*398*	**96**
Apramycin	*376*	**99**
Tetracycline	*783*	**52**
Florfenicol	*576*	**97**
Nalidixic ac.	*551*	**81**
Oxolinic ac.	*391*	**79**
Flumequine	*1,116*	**77**
Enrofloxacin	*1,162*	**94**
Trimethoprim	*519*	**81**
Trimethoprim-Sulfonamides	*1,163*	**79**

Table 6 - Ducks 2014 – All pathologies included - *E. coli*: susceptibility to antibiotics (proportion) (N= 585)

Antibiotic	*Total (N)*	**% S**
Amoxicillin	*582*	**51**
Amoxicillin-Clavulanic ac.	*466*	**91**
Cephalexin	*257*	**93**
Cephalothin	*221*	**90**
Cefoxitin	*423*	**99**
Ceftiofur	*572*	**99**
Cefquinome 30 µg	*234*	**99**
Spectinomycin	*462*	**89**
Gentamicin 10 UI	*539*	**94**
Neomycin	*260*	**98**
Apramycin	*297*	**96**
Tetracycline	*563*	**29**
Florfenicol	*521*	**99**
Nalidixic ac.	*422*	**70**
Oxolinic ac.	*316*	**71**
Flumequine	*557*	**71**
Enrofloxacin	*581*	**90**
Trimethoprim	*287*	**59**
Trimethoprim-Sulfonamides	*582*	**59**

Table 7 - Hens and broilers 2014 – All pathologies included - *Staphylococcus aureus*: susceptibility to antibiotics (proportion) (N= 331)

Antibiotic	*Total (N)*	**% S**
Penicillin G	*260*	**92**
Cefoxitin	*226*	**96**
Erythromycine	*247*	**94**
Tylosin	*274*	**96**
Spiramycin	*240*	**96**
Lincomycin	*287*	**94**
Gentamicin 10 UI	*237*	**99**
Neomycin	*180*	**99**
Tetracycline	*298*	**76**
Enrofloxacin	*330*	**96**
Trimethoprim-Sulfonamides	*330*	**100**

Table 8 - Hens and broilers 2014 – All pathologies included – *Enterococcus cecorum*: susceptibility to antibiotics (proportion) (N= 230)

Antibiotic	*Total (N)*	**% S**
Amoxicillin	*229*	**98**
Erythromycine	*162*	**59**
Tylosin	*159*	**55**
Spiramycin	*140*	**60**
Lincomycin	*164*	**45**
Gentamicin 500 µg	*124*	**99**
Tetracycline	*178*	**3**
Trimethoprim-Sulfonamides	*229*	**45**

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Rabbits

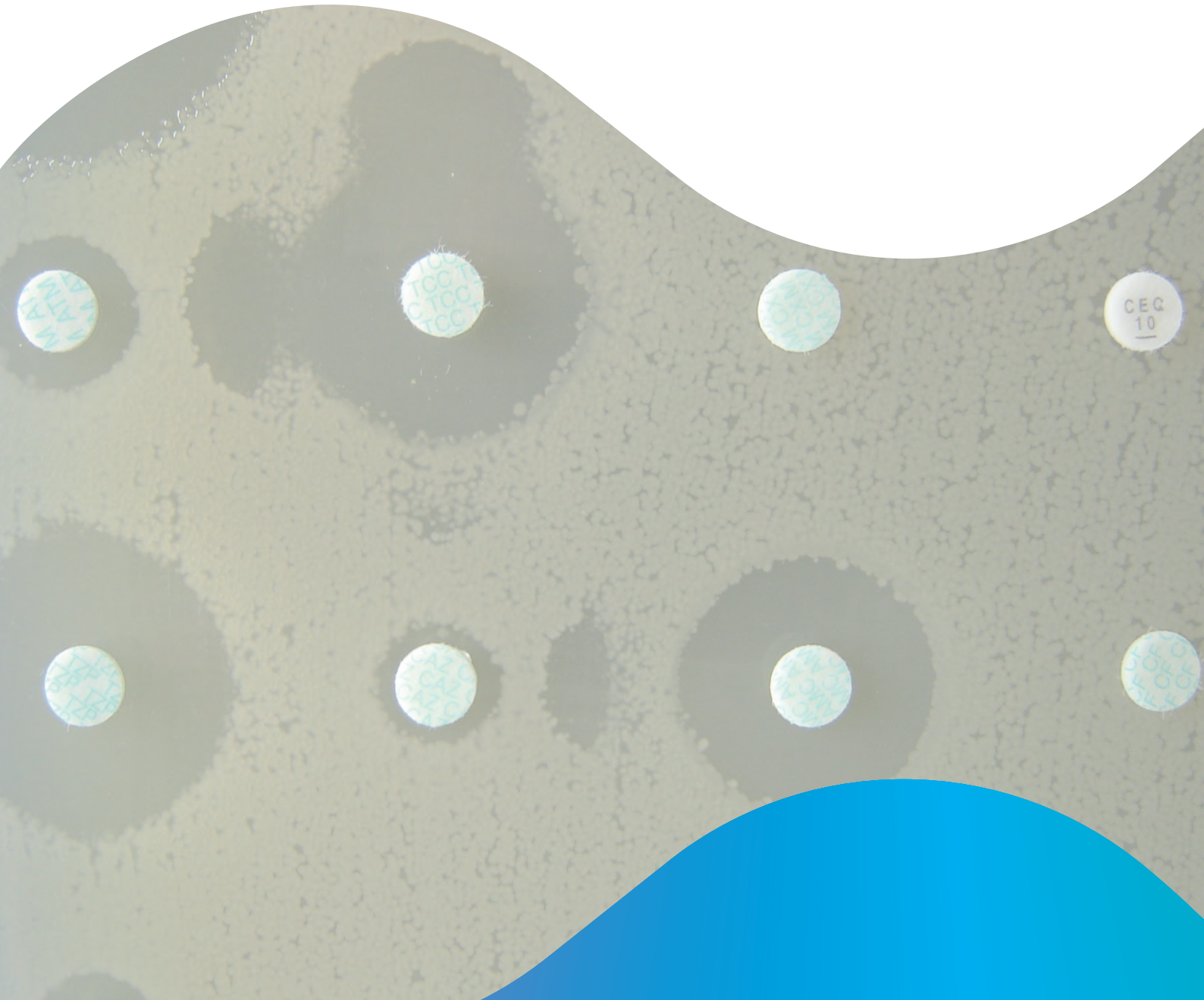
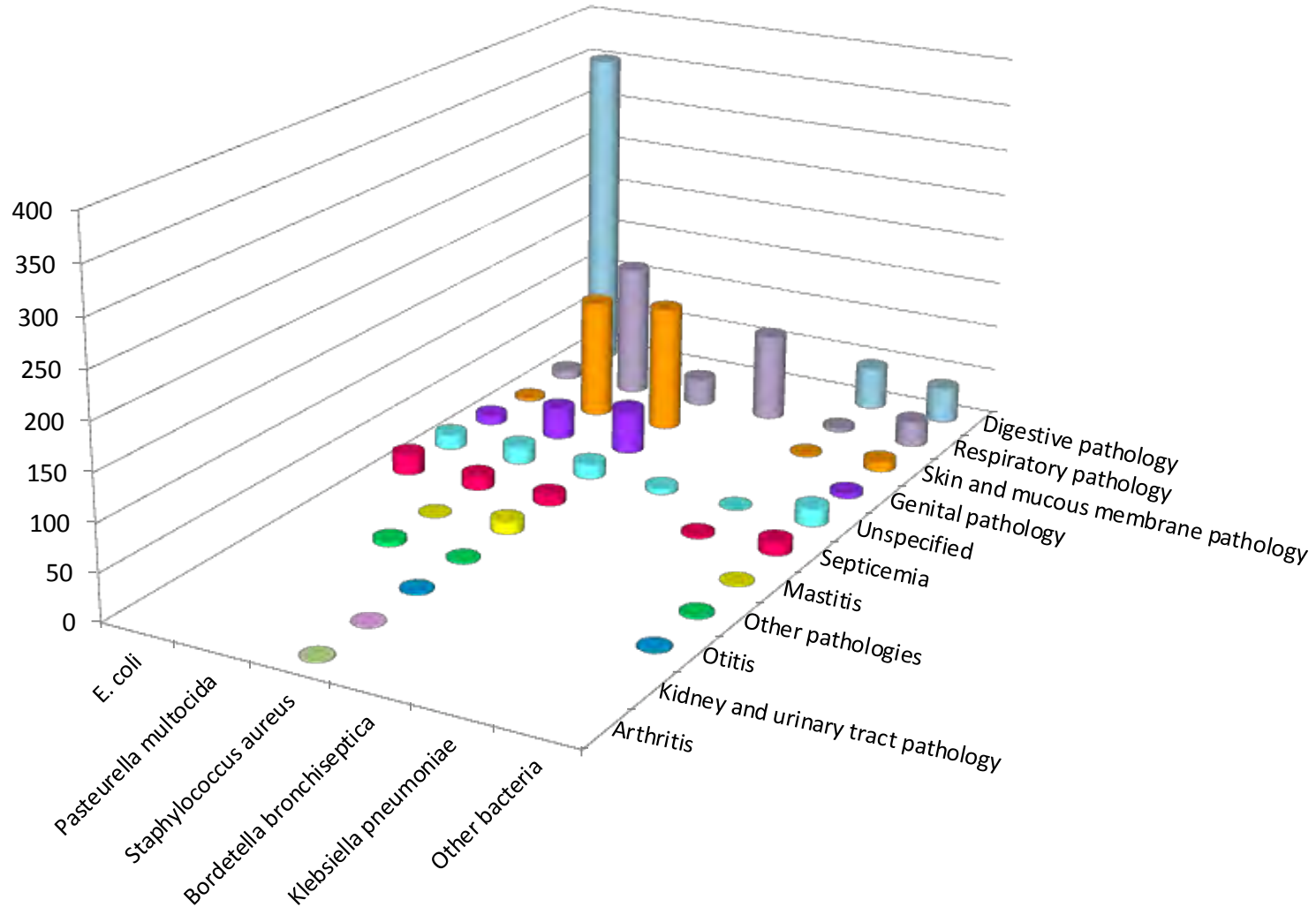


Figure 1 - Rabbits 2014 – Number of antibiograms by bacteria and animal



Note: *only values for bacterial groups having more than 30 occurrences are represented. Detailed values are presented in table 1 below*.

Table 1 - Rabbits 2014 – Number of antibiograms by bacteria and animal

	Pathology N *(%)*										
Bacteria N *(%)*	Digestive pathology	Respiratory pathology	Skin and mucous membrane pathology	Genital pathology	Unspecified	Septicemia	Mastitis	Otitis	Kidney and urinary tract pathology	Arthritis	**Total N *(%)***
E. coli	353	9	3	10	16	22					**413**
	(27.28)	*(0.70)*	*(0.23)*	*(0.77)*	*(1.24)*	*(1.70)*					***(31.92)***
Pasteurella multocida	2	143	129	34	24	15	1				**348**
	(0.15)	*(11.05)*	*(9.97)*	*(2.63)*	*(1.85)*	*(1.16)*	*(0.08)*				***(26.89)***
Staphylococcus aureus		29	136	48	18	11	13	2	1	1	**259**
		(2.24)	*(10.51)*	*(3.71)*	*(1.39)*	*(0.85)*	*(1.00)*	*(0.15)*	*(0.08)*	*(0.08)*	***(20.02)***
Bordetella bronchiseptica		94			6						**100**
		(7.26)			*(0.46)*						***(7.73)***
Klebsiella pneumoniae	46	4	2		1	3					**56**
	(3.55)	*(0.31)*	*(0.15)*		*(0.08)*	*(0.23)*					***(4.33)***
Other bacteria	38	27	11	5	21	14	1	1			**118**
< 30 occurrences	*(2.94)*	*(2.09)*	*(0.85)*	*(0.39)*	*(1.62)*	*(1.08)*	*(0.08)*	*(0.08)*			***(9.12)***
Total N	**439**	**306**	**281**	**97**	**86**	**65**	**15**	**3**	**1**	**1**	**1,294**
(%)	***(33.93)***	***(23.65)***	***(21.72)***	***(7.50)***	***(6.65)***	***(5.02)***	***(1.16)***	***(0.23)***	***(0.08)***	***(0.08)***	***(100.00)***

Table 2 - Rabbits 2014 - All pathologies included - *E. coli*: susceptibility to antibiotics (proportion) (N = 413)

Antibiotic	*Total (N)*	**% S**
Amoxicillin	*187*	**47**
Amoxicillin-Clavulanic ac.	*193*	**82**
Cephalexin	*194*	**91**
Cefoxitin	*210*	**97**
Ceftiofur	*363*	**99**
Cefquinome 30 µg	*184*	**98**
Streptomycin 10 UI	*135*	**37**
Spectinomycin	*295*	**86**
Gentamicin 10 UI	*406*	**86**
Neomycin	*397*	**79**
Apramycin	*380*	**85**
Tetracycline	*407*	**15**
Nalidixic ac.	*260*	**60**
Flumequine	*235*	**63**
Enrofloxacin	*402*	**89**
Marbofloxacin	*116*	**90**
Danofloxacin	*234*	**83**
Trimethoprim	*145*	**15**
Trimethoprim-Sulfonamides	*410*	**28**

Table 3 - Rabbits 2014 – All pathologies included - *Pasteurella multocida*: susceptibility to antibiotics (proportion) (N= 348)

Antibiotic	*Total (N)*	**% S**
Ceftiofur	*176*	**100**
Tilmicosin	*342*	**98**
Spectinomycin	*193*	**99**
Gentamicin 10 UI	*301*	**99**
Neomycin	*113*	**100**
Tetracycline	*346*	**99**
Nalidixic ac.	*108*	**91**
Flumequine	*207*	**97**
Enrofloxacin	*348*	**99**
Danofloxacin	*195*	**99**
Trimethoprim-Sulfonamides	*347*	**99**

Table 4 - Rabbits 2014 – All pathologies included - *Staphylococcus aureus*: susceptibility to antibiotics (proportion) (N= 259)

Antibiotic	*Total (N)*	**% S**
Penicillin G	*134*	**93**
Cefoxitin	*141*	**100**
Erythromycine	*190*	**41**
Spiramycin	*255*	**41**
Gentamicin 10 UI	*258*	**50**
Tetracycline	*256*	**38**
Enrofloxacin	*259*	**88**
Trimethoprim-Sulfonamides	*258*	**60**

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Annex 8

Fish

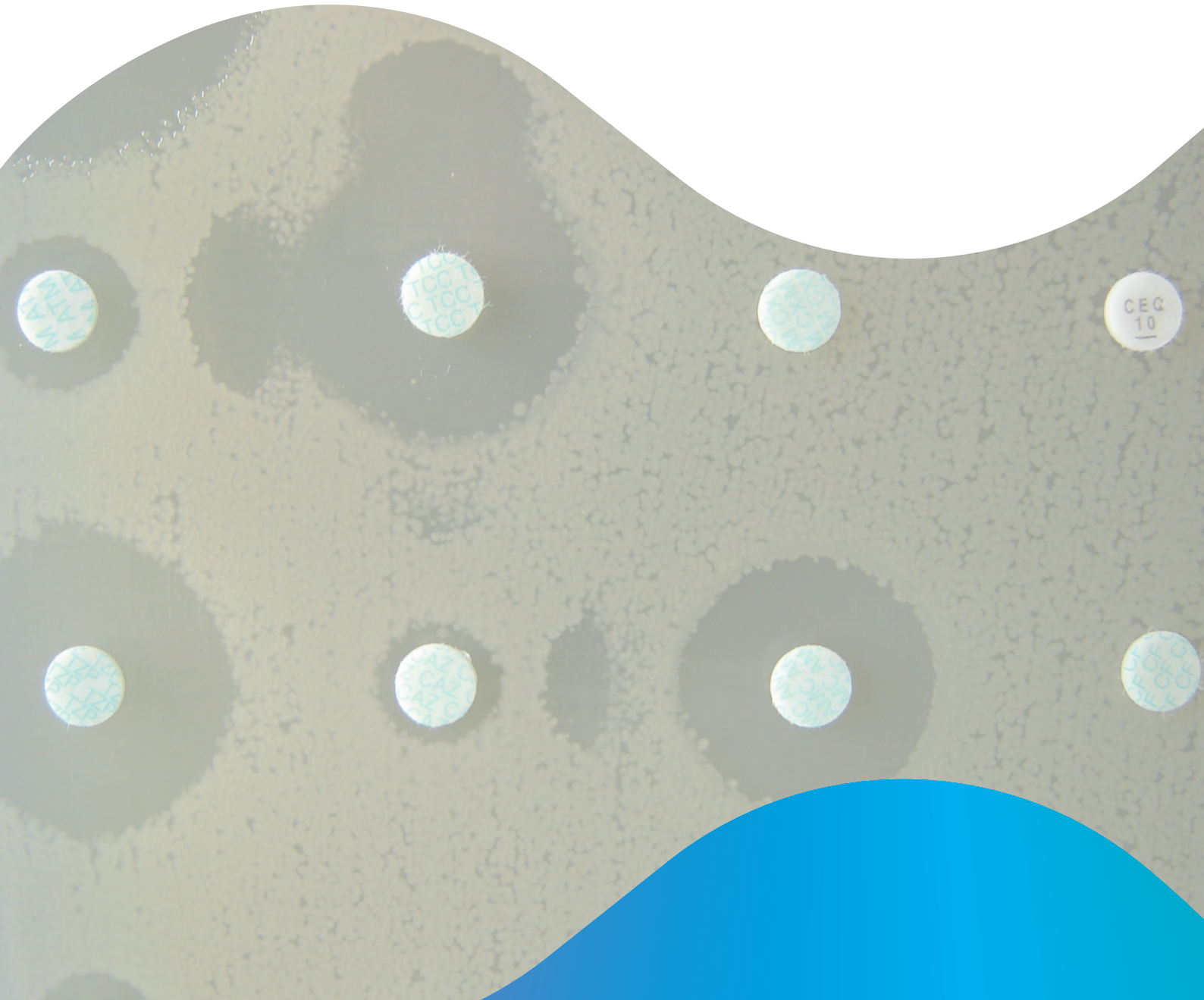

Figure 1 - Fish 2014 – Antibiogram proportions by animal species

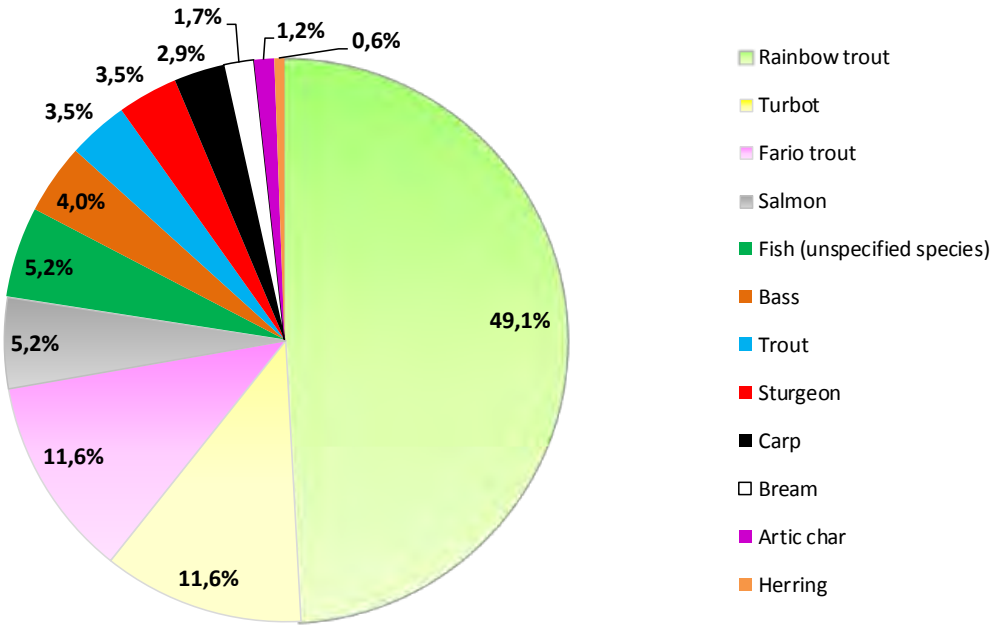

Table 1 - Fish 2014 – Number of antibiograms by bacteria and pathology

	Pathology N *(%)*			
Bacteria N *(%)*	Unspecified	Septicemia	Skin and mucous membrane pathology	**Total N *(%)***
Aeromonas salmonicida	61 *(35.26)*	23 *(13.29)*		**84 *(48.55)***
Yersinia ruckeri	15 *(8.67)*	10 *(5.78)*		**25 *(14.45)***
Aeromonas	11 *(6.36)*	7 *(4.05)*	6 *(3.47)*	**24 *(13.87)***
Carnobacterium	7 *(4.05)*	4 *(2.31)*		**11 *(6.36)***
Vibrio	4 *(2.31)*	6 *(3.47)*		**10 *(5.78)***
Edwardsiella tarda	7 *(4.05)*			**7 *(4.05)***
Plesiomonas shigelloides	1 *(0.58)*	2 *(1.16)*		**3 *(1.73)***
E. coli	2 *(1.16)*			**2 *(1.16)***
Photobacterium		2 *(1.16)*		**2 *(1.16)***
Yersinia	2 *(1.16)*			**2 *(1.16)***
Shewanella putrefaciens	1 *(0.58)*			**1 *(0.58)***
Streptococcus			1 *(0.58)*	**1 *(0.58)***
Vagococcus	1 *(0.58)*			**1 *(0.58)***
Total N (%)	**112 *(64.74)***	**54 *(31.21)***	**7 *(4.05)***	**173 *(100.00)***

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Annex 9

Horses

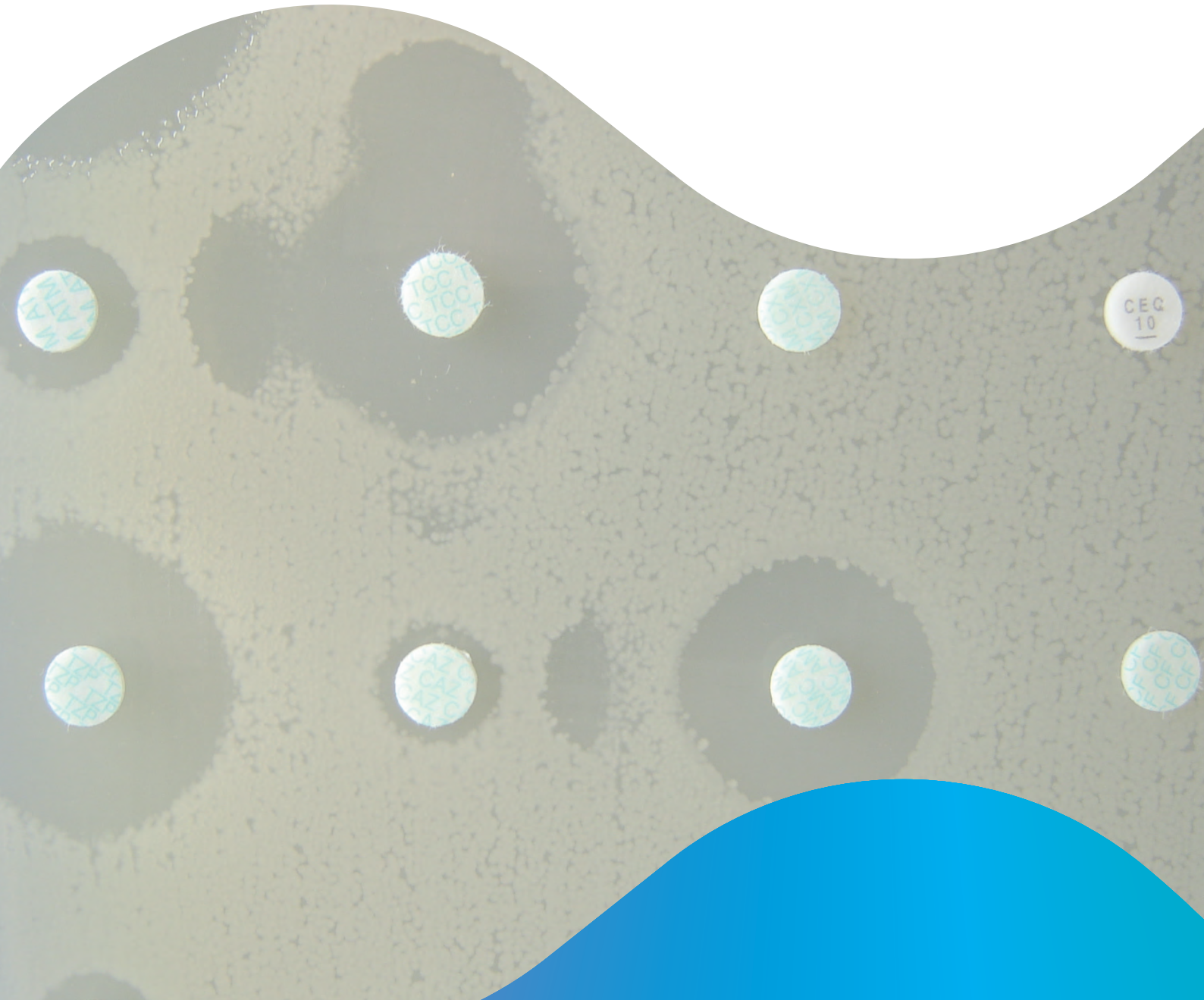


Figure 1 - Horses 2014 – Number of antibiograms by age group and pathology

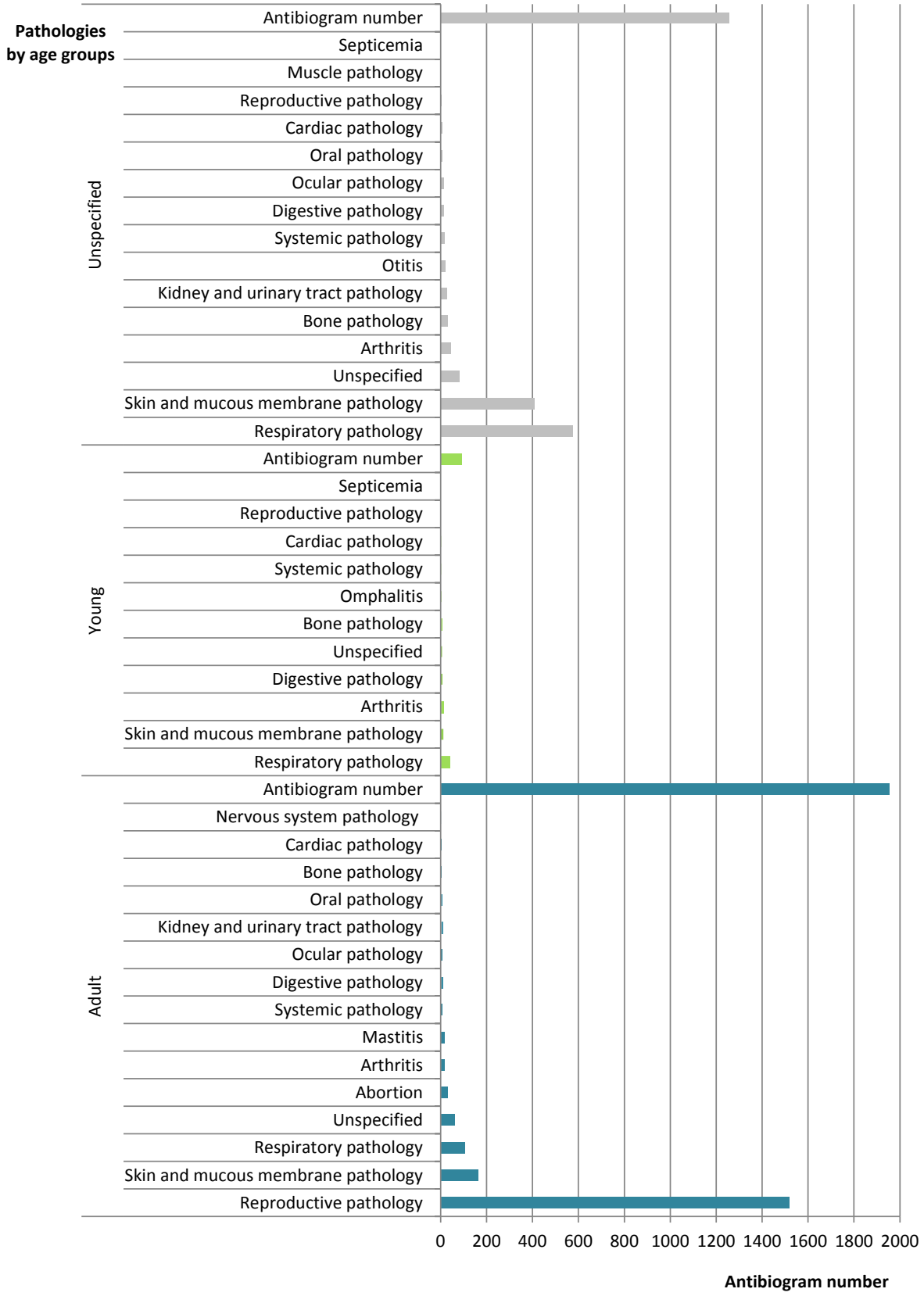
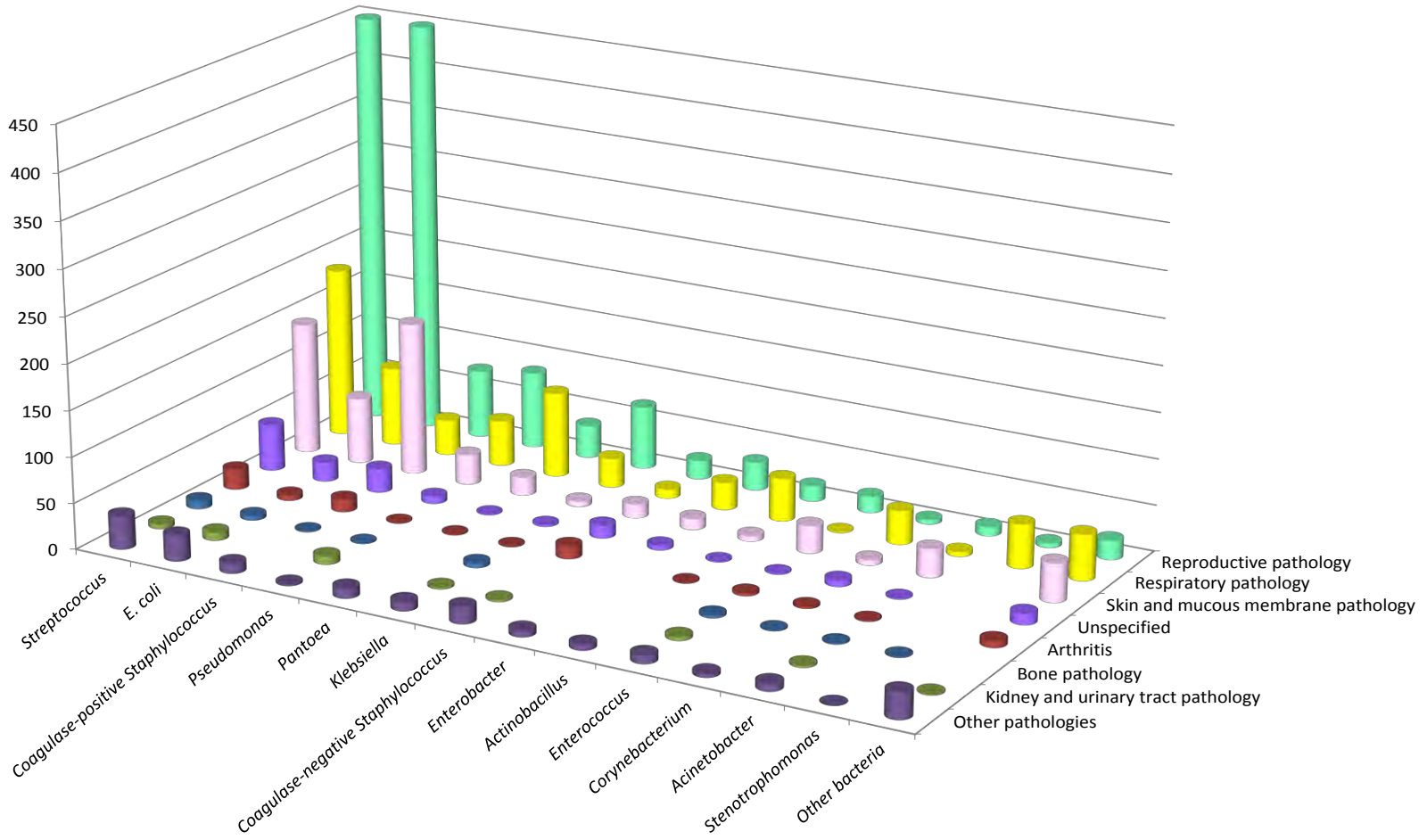


Table 1 - Horses 2014 – Number of antibiograms by age group and pathology

	Age group N (%)			
Bacteria N (%)	Adult	Unspecified	Young	**Total N *(%)***
Reproductive pathology	1,519 *(46.07)*	4 *(0.12)*	1 *(0.03)*	**1,524 *(46.22)***
Respiratory pathology	104 *(3.15)*	574 *(17.41)*	36 *(1.09)*	**714 *(21.66)***
Skin and mucous membrane pathology	162 *(4.91)*	410 *(12.44)*	12 *(0.36)*	**584 *(17.71)***
Unspecified	62 *(1.88)*	82 *(2.49)*	6 *(0.18)*	**150 *(4.55)***
Arthritis	19 *(0.58)*	43 *(1.30)*	11 *(0.33)*	**73 *(2.21)***
Bone pathology	4 *(0.12)*	31 *(0.94)*	5 *(0.15)*	**40 *(1.21)***
Kidney and urinary tract pathology	6 *(0.18)*	28 *(0.85)*		**34 *(1.03)***
Abortion	32 *(0.97)*			**32 *(0.97)***
Digestive pathology	7 *(0.21)*	15 *(0.45)*	8 *(0.24)*	**30 *(0.91)***
Systemic pathology	7 *(0.21)*	18 *(0.55)*	2 *(0.06)*	**27 *(0.82)***
Otitis		21 *(0.64)*		**21 *(0.64)***
Ocular pathology	6 *(0.18)*	13 *(0.39)*		**19 *(0.58)***
Mastitis	18 *(0.55)*			**18 *(0.55)***
Oral pathology	5 *(0.15)*	8 *(0.24)*		**13 *(0.39)***
Cardiac pathology	2 *(0.06)*	7 *(0.21)*	2 *(0.06)*	**10 *(0.33)***
Omphalitis			3 *(0.09)*	**3 *(0.09)***
Septicemia		1 *(0.03)*	1 *(0.03)*	**2 *(0.06)***
Muscle pathology		1 *(0.03)*		**1 *(0.03)***
Nervous system pathology	1 *(0.03)*			**1 *(0.03)***
Total N (%)	**1,954 *(59.27)***	**1,256 *(38.10)***	**87 *(2.64)***	**3,297 *(100.00)***

Figure 2 - Horses 2014 – Number of antibiograms by bacterial group and pathology



Note: *all values for pathologies >1% and bacterial groups having more than 30 occurrences are represented. Detailed values are presented in table 2 below.*

Table 2 - Horses 2014 – Number of antibiograms by bacterial group and pathology

	Pathology N (%)																				
Bacteria N (%)	Reproductive pathology	Respiratory pathology	Skin and mucous membrane pathology	Unspecified	Arthritis	Bone pathology	Kidney and urinary tract pathology	Abortion	Digestive pathology	Systemic pathology	Otitis	Ocular pathology	Mastitis	Oral pathology	Cardiac pathology	Omphalitis	Septicemia	Muscle pathology	Cardiac pathology	Nervous system pathology	**Total N *(%)***
Streptococcus	668 *(20.26)*	186 *(5.64)*	144 *(4.37)*	51 *(1.55)*	22 *(0.67)*	13 *(0.39)*	5 *(0.15)*	7 *(0.21)*	4 *(0.12)*	6 *(0.18)*	2 *(0.06)*	4 *(0.12)*	5 *(0.15)*	4 *(0.12)*	3 *(0.09)*	1 *(0.03)*					**1,125** ***(34.12)***
E. coli	464 *(14.07)*	86 *(2.61)*	72 *(2.18)*	21 *(0.64)*	6 *(0.18)*	9 *(0.27)*	9 *(0.27)*	2 *(0.06)*	12 *(0.36)*	4 *(0.12)*	1 *(0.03)*	2 *(0.06)*	2 *(0.06)*	2 *(0.06)*		1 *(0.03)*	**1** *(0.03)*		1 *(0.03)*		**695** ***(21.08)***
Coagulase-positive Staphylococcus	75 *(2.27)*	39 *(1.18)*	167 *(5.07)*	26 *(0.79)*	14 *(0.42)*	5 *(0.15)*				5 *(0.15)*	1 *(0.03)*	1 *(0.03)*	1 *(0.03)*	2 *(0.06)*	1 *(0.03)*						**337** ***(10.22)***
Pseudomonas	84 *(2.55)*	50 *(1.52)*	33 *(1.00)*	8 *(0.24)*	1 *(0.03)*	1 *(0.03)*	9 *(0.27)*		1 *(0.03)*		1 *(0.03)*										**188** ***(5.70)***
Pantoea	36 *(1.09)*	93 *(2.82)*	20 *(0.61)*	1 *(0.03)*	1 *(0.03)*	1 *(0.03)*		4 *(0.12)*		1 *(0.03)*	2 *(0.06)*	3 *(0.09)*	1 *(0.03)*								**163** ***(4.94)***
Klebsiella	69 *(2.09)*	32 *(0.97)*	6 *(0.18)*	2 *(0.06)*	1 *(0.03)*		2 *(0.06)*	3 *(0.09)*			1 *(0.03)*	1 *(0.03)*	2 *(0.06)*	1 *(0.03)*		1 *(0.03)*				1 *(0.03)*	**122** ***(3.70)***
Coagulase-negative Staphylococcus	21 *(0.64)*	10 *(0.30)*	15 *(0.45)*	14 *(0.42)*	14 *(0.42)*	5 *(0.15)*	2 *(0.06)*	2 *(0.06)*			11 *(0.33)*	1 *(0.03)*	3 *(0.09)*	1 *(0.03)*							**99** ***(3.00)***
Enterobacter	31 *(0.94)*	30 *(0.91)*	12 *(0.36)*	5 *(0.15)*				1 *(0.03)*		3 *(0.09)*		1 *(0.03)*		1 *(0.03)*	1 *(0.03)*						**85** ***(2.58)***
Actinobacillus	17 *(0.52)*	47 *(1.43)*	6 *(0.18)*	1 *(0.03)*	1 *(0.03)*				4 *(0.12)*						2 *(0.06)*						**78** ***(2.37)***
Enterococcus	18 *(0.55)*	1 *(0.03)*	30 *(0.91)*	1 *(0.03)*	3 *(0.09)*		4 *(0.12)*			4 *(0.12)*		1 *(0.03)*	2 *(0.06)*		1 *(0.03)*			1 *(0.03)*			**66** ***(2.00)***
Corynebacterium	5 *(0.15)*	37 *(1.12)*	6 *(0.18)*	7 *(0.21)*	2 *(0.06)*	3 *(0.09)*			4 *(0.12)*												**64** ***(1.94)***
Acinetobacter	10 *(0.30)*	5 *(0.15)*	31 *(0.94)*	1 *(0.03)*	1 *(0.03)*	1 *(0.03)*	2 *(0.06)*	2 *(0.06)*		1 *(0.03)*	1 *(0.03)*	3 *(0.09)*		1 *(0.03)*							**59** ***(1.79)***
Stenotrophomonas	5 *(0.15)*	48 *(1.46)*				1 *(0.03)*															**54** ***(1.64)***
Other bacteria < 30 occurrences	21 *(0.64)*	50 *(1.52)*	42 *(1.27)*	12 *(0.36)*	7 *(0.21)*	1 *(0.03)*	1 *(0.03)*	11 *(0.33)*	5 *(0.15)*	3 *(0.09)*	1 *(0.03)*	2 *(0.06)*	2 *(0.06)*	1 *(0.03)*	2 *(0.06)*	0	1 *(0.03)*	0	0	0	**162** ***(4.91)***
Total N *(%)*	**1,524** ***(46.22)***	**714** ***(21.66)***	**584** ***(17.71)***	**150** ***(4.55)***	**73** ***(2.21)***	**40** ***(1.21)***	**34** ***(1.03)***	**32** ***(0.97)***	**30** ***(0.91)***	**27** ***(0.82)***	**21** ***(0.64)***	**19** ***(0.58)***	**18** ***(0.55)***	**13** ***(0.39)***	**10** ***(0.30)***	**3** ***(0.09)***	**2** ***(0.06)***	**1** ***(0.03)***	**1** ***(0.03)***	**1** ***(0.03)***	**3,297** ***(100.00)***

Table 3 - Horses 2014 – Reproductive pathology – All age groups included – *E. coli*: susceptibility to antibiotics (proportion) (N= 464)

Antibiotic	*Total (N)*	**% S**
Amoxicillin	*459*	**69**
Amoxicillin-Clavulanic ac.	*462*	**76**
Cephalexin	*50*	**92**
Cephalothin	*44*	**86**
Cefoxitin	*54*	**94**
Cefuroxime	*47*	**91**
Cefoperazone	*47*	**96**
Ceftiofur	*463*	**95**
Cefepime	*36*	**97**
Cefquinome 30 µg	*462*	**95**
Streptomycin 10 UI	*331*	**47**
Kanamycin 30 UI	*454*	**84**
Gentamicin 10 UI	*464*	**94**
Neomycin	*181*	**93**
Amikacine	*406*	**99**
Tetracycline	*335*	**82**
Florfenicol	*46*	**98**
Nalidixic ac.	*328*	**97**
Oxolinic ac.	*129*	**98**
Flumequine	*415*	**98**
Enrofloxacin	*464*	**98**
Marbofloxacin	*464*	**99**
Danofloxacin	*49*	**100**
Sulfonamides	*34*	**79**
Trimethoprim	*32*	**81**
Trimethoprim-Sulfonamides	*458*	**79**

Table 4 - Horses 2014 – Respiratory pathology – All age groups included – *E. coli*: susceptibility to antibiotics (proportion) (N= 86)

Antibiotic	*Total (N)*	**% S**
Amoxicillin	*86*	**62**
Amoxicillin-Clavulanic ac.	*86*	**74**
Ceftiofur	*86*	**92**
Cefquinome 30 µg	*86*	**91**
Streptomycin 10 UI	*84*	**46**
Kanamycin 30 UI	*84*	**81**
Gentamicin 10 UI	*86*	**91**
Amikacine	*83*	**99**
Tetracycline	*85*	**85**
Nalidixic ac.	*86*	**88**
Flumequine	*84*	**92**
Enrofloxacin	*86*	**92**
Marbofloxacin	*85*	**92**
Trimethoprim-Sulfonamides	*86*	**74**

Table 5 - Horses 2014 – Skin and mucous membrane pathology – All age groups included – *E. coli*: susceptibility to antibiotics (proportion) (N= 72)

Antibiotic	*Total (N)*	**% S**
Amoxicillin	*72*	**54**
Amoxicillin-Clavulanic ac.	*72*	**63**
Ceftiofur	*72*	**92**
Cefquinome 30 µg	*70*	**91**
Streptomycin 10 UI	*67*	**34**
Kanamycin 30 UI	*67*	**76**
Gentamicin 10 UI	*72*	**85**
Amikacine	*66*	**98**
Tetracycline	*70*	**70**
Nalidixic ac.	*70*	**84**
Flumequine	*69*	**87**
Enrofloxacin	*72*	**86**
Marbofloxacin	*70*	**87**
Trimethoprim-Sulfonamides	*72*	**58**

Table 6 - Horses 2014 – All pathologies and age groups included – *Klebsiella* spp: susceptibility to antibiotics (proportion) (N= 122)

Antibiotic	*Total (N)*	**% S**
Amoxicillin-Clavulanic ac.	*121*	**91**
Cephalexin	*38*	**95**
Cephalothin	*54*	**96**
Cefoxitin	*75*	**95**
Cefuroxime	*60*	**98**
Cefotaxime	*41*	**100**
Ceftazidime	*41*	**98**
Ceftiofur	*122*	**98**
Cefepime	*54*	**100**
Cefquinome 30 µg	*122*	**100**
Ertapenem	*41*	**100**
Aztreonam	*41*	**100**
Streptomycin 10 UI	*105*	**85**
Kanamycin 30 UI	*116*	**94**
Gentamicin 10 UI	*122*	**98**
Neomycin	*48*	**96**
Amikacine	*79*	**99**
Tetracycline	*108*	**86**
Florfenicol	*32*	**97**
Nalidixic ac.	*101*	**90**
Flumequine	*94*	**96**
Enrofloxacin	*122*	**97**
Marbofloxacin	*117*	**99**
Danofloxacin	*33*	**100**
Trimethoprim-Sulfonamides	*120*	**87**

Table 7 - Horses 2014 – All pathologies and age groups included – *Enterobacter* spp*:* susceptibility to antibiotics (proportion) (N= 85)

Antibiotic	*Total (N)*	**% S**
Amoxicillin-Clavulanic ac.	*84*	**10**
Ceftiofur	*85*	**89**
Cefquinome 30 µg	*84*	**98**
Streptomycin 10 UI	*74*	**80**
Kanamycin 30 UI	*80*	**89**
Gentamicin 10 UI	*85*	**89**
Amikacine	*77*	**97**
Tetracycline	*74*	**61**
Nalidixic ac.	*74*	**80**
Flumequine	*80*	**83**
Enrofloxacin	*85*	**92**
Marbofloxacin	*83*	**100**
Trimethoprim-Sulfonamides	*85*	**84**

Table 8 - Horses 2014 – Skin and mucous membrane pathology - All age groups included –*Staphylococcus aureus*: susceptibility to antibiotics (proportion) (N= 104)

Antibiotic	*Total (N)*	**% S**
Penicillin	*99*	**75**
Cefoxitin	*95*	**91**
Oxacillin	*89*	**93**
Erythromycine	*100*	**97**
Streptomycin 10 UI	*94*	**89**
Kanamycin 30 UI	*95*	**88**
Gentamicin 10 UI	*104*	**89**
Tetracycline	*97*	**88**
Enrofloxacin	*104*	**95**
Marbofloxacin	*99*	**96**
Trimethoprim-Sulfonamides	*103*	**98**
Rifampicin	*92*	**97**

Table 9 - Horses 2014 – Reproductive pathology - All age groups included – Group C *Streptococcus et Streptococcus zooepidemicus:* susceptibility to antibiotics (proportion) (N= 570)

Antibiotic	*Total (N)*	**% S**
Ampicillin	*77*	**100**
Oxacillin	*536*	**99**
Erythromycine	*570*	**92**
Tylosin	*39*	**92**
Spiramycin	*161*	**97**
Lincomycin	*84*	**92**
Streptomycin 500 µg	*493*	**97**
Kanamycin 1000 µg	*490*	**96**
Gentamicin 500 µg	*493*	**99**
Tetracycline	*494*	**36**
Florfenicol	*56*	**96**
Enrofloxacin	*568*	**29**
Marbofloxacin	*556*	**83**
Trimethoprim-Sulfonamides	*566*	**95**
Rifampicin	*520*	**54**

Table 10 - Horses 2014 – Respiratory pathology - All age groups included – *Streptococcus*: susceptibility to antibiotics (proportion) (N= 186)

Antibiotic	*Total (N)*	**% S**
Oxacillin	*180*	**98**
Erythromycine	*186*	**97**
Streptomycin 500 µg	*176*	**100**
Kanamycin 1000 µg	*172*	**100**
Gentamicin 500 µg	*177*	**100**
Tetracycline	*178*	**46**
Enrofloxacin	*184*	**36**
Marbofloxacin	*179*	**86**
Trimethoprim-Sulfonamides	*186*	**91**
Rifampicin	*169*	**67**

Table 11 - Horses 2014 – Skin and mucous membrane pathology - All age groups included – *Streptococcus*: susceptibility to antibiotics (proportion) (N= 144)

Antibiotic	*Total (N)*	**% S**
Oxacillin	*139*	**99**
Erythromycine	*144*	**97**
Streptomycin 500 µg	*143*	**97**
Kanamycin 1000 µg	*140*	**97**
Gentamicin 500 µg	*143*	**99**
Tetracycline	*142*	**46**
Enrofloxacin	*143*	**33**
Marbofloxacin	*143*	**83**
Trimethoprim-Sulfonamides	*142*	**96**
Rifampicin	*126*	**49**

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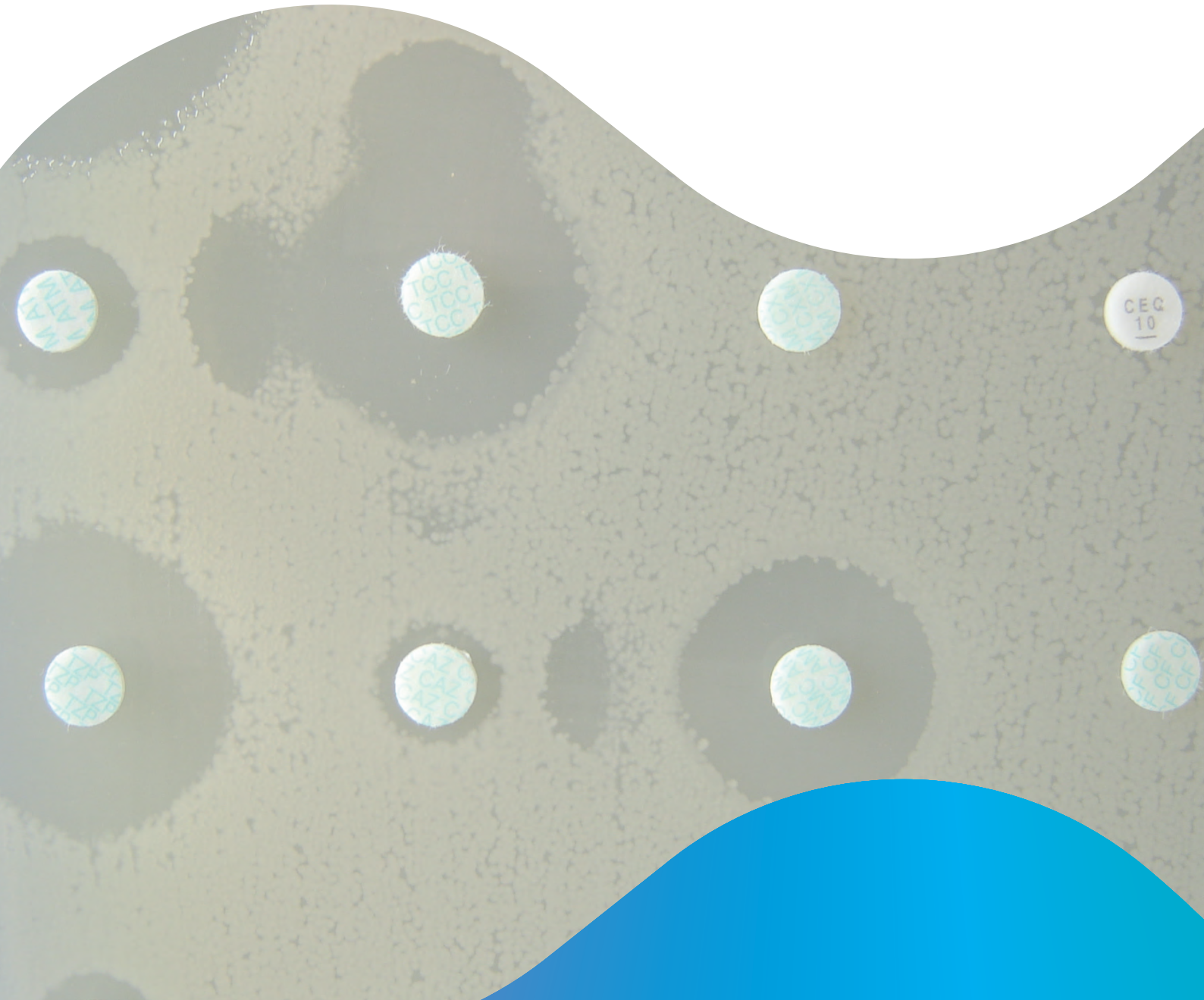
Annex 10

Dogs



Annex 10 – Dogs

Figure 1 - Dogs 2014 – Number of antibiograms by age group and pathology

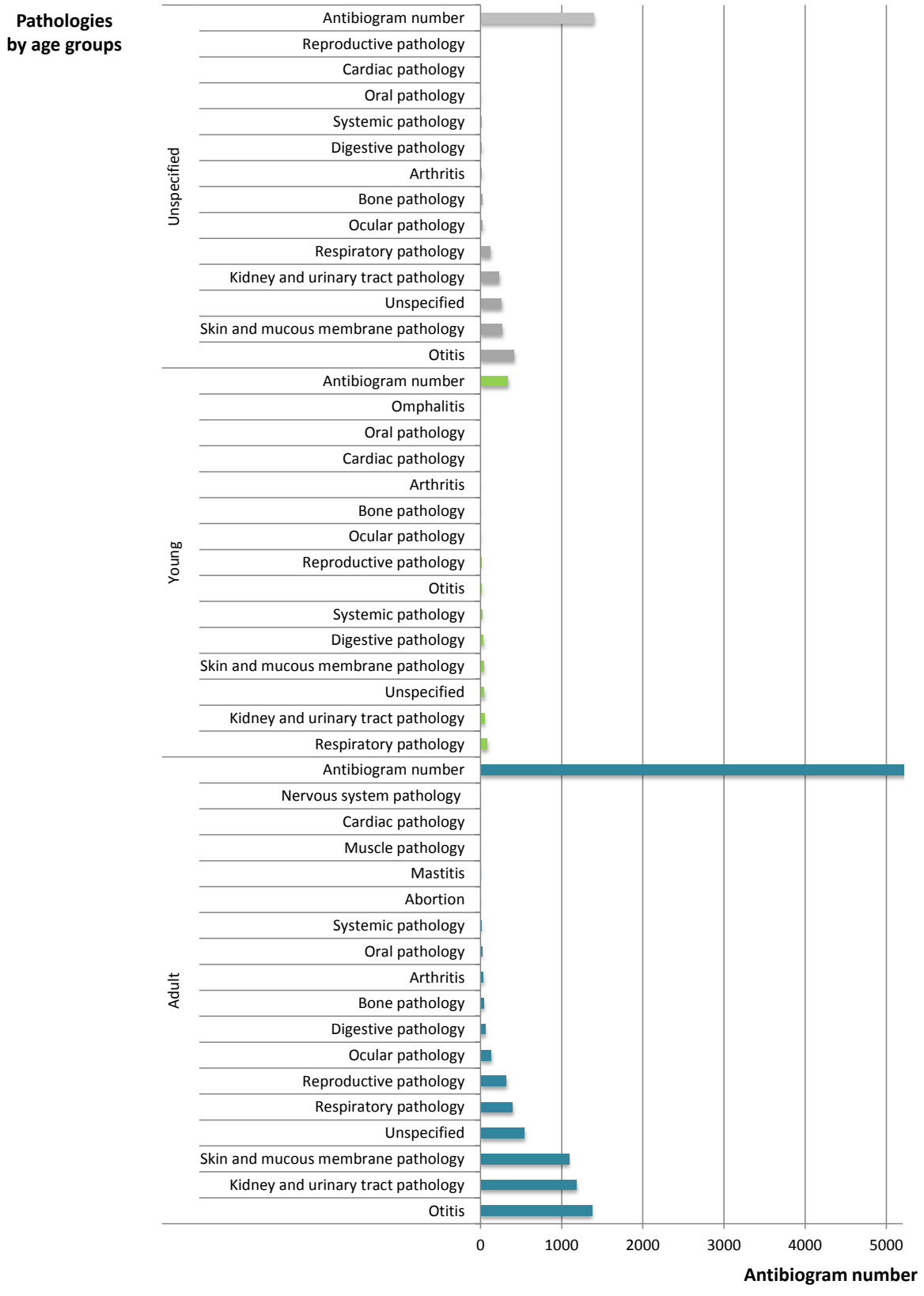
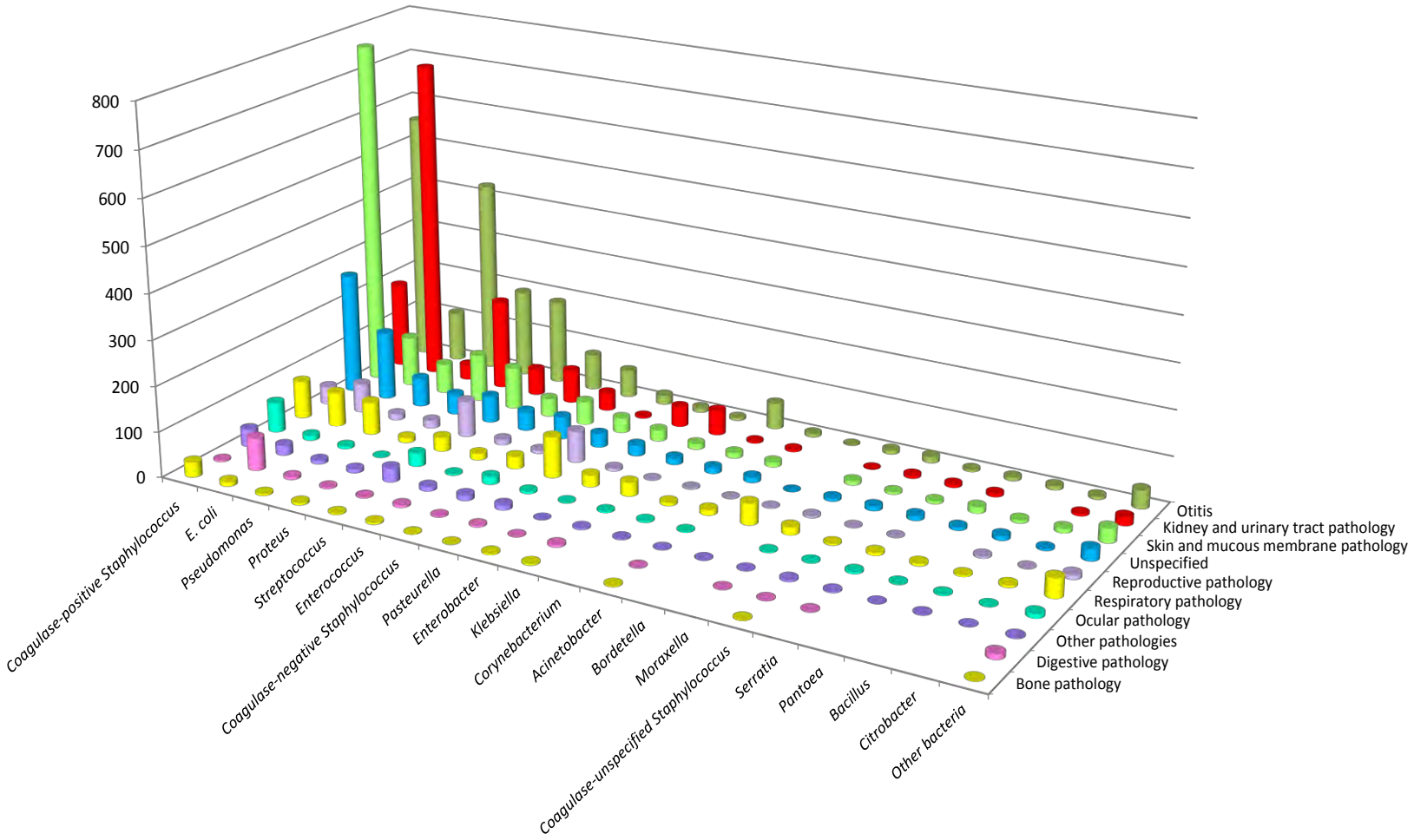


Table 1 - Dogs 2014 – Number of antibiograms by age group and pathology

	Age group N *(%)*			
Pathology N (%)	Adult	Unspecified	Young	**Total N *(%)***
Otitis	1,378 *(19.68)*	417 *(5.96)*	19 *(0.27)*	1,814 *(25.91)*
Kidney and urinary tract pathology	1,186 *(16.94)*	230 *(3.28)*	52 *(0.74)*	1,468 *(20.97)*
Skin and mucous membrane pathology	1,093 *(15.61)*	272 *(3.88)*	44 *(0.63)*	1,409 *(20.12)*
Unspecified	542 *(7.74)*	261 *(3.73)*	47 *(0.67)*	850 *(12.14)*
Respiratory pathology	396 *(5.66)*	127 *(1.81)*	86 *(1.23)*	609 *(8.70)*
Reproductive pathology	321 *(4.58)*	1 *(0.01)*	12 *(0.17)*	334 *(4.77)*
Ocular pathology	137 *(1.96)*	25 *(0.36)*	9 *(0.13)*	171 *(2.44)*
Digestive pathology	64 *(0.91)*	15 *(0.21)*	39 *(0.56)*	118 *(1.69)*
Bone pathology	44 *(0.63)*	21 *(0.30)*	6 *(0.09)*	71 *(1.01)*
Arthritis	38 *(0.54)*	16 *(0.23)*	5 *(0.07)*	59 *(0.84)*
Systemic pathology	15 *(0.21)*	10 *(0.14)*	21 *(0.30)*	46 *(0.66)*
Oral pathology	20 *(0.29)*	8 *(0.11)*	1 *(0.01)*	29 *(0.41)*
Abortion	7 *(0.10)*			7 *(0.10)*
Mastitis	7 *(0.10)*			7 *(0.10)*
Muscle pathology	4 *(0.06)*			4 *(0.06)*
Cardiac pathology	2 *(0.03)*	1 *(0.01)*	1 *(0.01)*	4 *(0.05)*
Omphalitis			1 *(0.01)*	1 *(0.01)*
Nervous system pathology	1 *(0.01)*			1 *(0.01)*
Total N *(%)*	**5,255 *(75.05)***	**1,404 *(20.05)***	**343 *(4.90)***	**7,002 *(100.00)***

Figure 2 - Dogs 2014 – Number of antibiograms by bacterial group and pathology



Note: *all values for pathologies >1% and bacterial groups having more than 30 occurrences are represented. Detailed values are presented in table 2 below.*

Table 2 - Dogs 2014 – Number of antibiograms by bacterial group and pathology

	Pathology N (%)																		
Bacteria N (%)	Otitis	Kidney and urinary tract pathology	Skin and mucous membrane pathology	Unspecified	Respiratory pathology	Reproductive pathology	Ocular pathology	Digestive pathology	Bone pathology	Arthritis	Systemic pathology	Oral pathology	Abortion	Mastitis	Muscle pathology	Cardiac pathology	Omphalitis	Nervous system pathology	**Total N *(%)***
Coagulase-positive Staphylococcus	556 *(7.94)*	191 *(2.73)*	765 *(10.93)*	268 *(3.83)*	84 *(1.20)*	40 *(0.57)*	67 *(0.96)*	3 *(0.04)*	33 *(0.47)*	25 *(0.36)*	8 *(0.11)*	1 *(0.01)*		3 *(0.04)*		**2** *(0.03)*			**2,046** ***(29.22)***
E. coli	111 *(1.59)*	711 *(10.15)*	111 *(1.59)*	152 *(2.17)*	76 *(1.09)*	64 *(0.91)*	11 *(0.16)*	72 *(1.03)*	10 *(0.14)*	3 *(0.04)*	14 *(0.20)*	1 *(0.01)*		1 *(0.01)*	1 *(0.01)*	1 *(0.01)*	1 *(0.01)*		**1,340** ***(19.14)***
Pseudomonas	428 *(6.11)*	34 *(0.49)*	66 *(0.94)*	64 *(0.91)*	73 *(1.04)*	13 *(0.19)*	6 *(0.09)*	6 *(0.09)*	4 *(0.06)*	2 *(0.03)*	2 *(0.03)*	3 *(0.04)*				1 *(0.01)*			**702** ***(10.03)***
Proteus	194 *(2.77)*	200 *(2.86)*	105 *(1.50)*	45 *(0.64)*	11 *(0.16)*	17 *(0.24)*	1 *(0.01)*	3 *(0.04)*	5 *(0.07)*		5 *(0.07)*	1 *(0.01)*	1 *(0.01)*		1 *(0.01)*				**589** ***(8.41)***
Streptococcus	187 *(2.67)*	59 *(0.84)*	93 *(1.33)*	59 *(0.84)*	31 *(0.44)*	80 *(1.14)*	29 *(0.41)*	3 *(0.04)*	3 *(0.04)*	18 *(0.26)*	5 *(0.07)*	6 *(0.09)*	2 *(0.03)*						**575** ***(8.21)***
Enterococcus	80 *(1.14)*	74 *(1.06)*	40 *(0.57)*	43 *(0.61)*	14 *(0.20)*	12 *(0.17)*	3 *(0.04)*	5 *(0.07)*	4 *(0.06)*	3 *(0.04)*	3 *(0.04)*	1 *(0.01)*	2 *(0.03)*		1 *(0.01)*				**285** ***(4.07)***
Coagulase-negative Staphylococcus	61 *(0.87)*	40 *(0.57)*	52 *(0.74)*	49 *(0.70)*	27 *(0.39)*	7 *(0.10)*	17 *(0.24)*	2 *(0.03)*	1 *(0.01)*	3 *(0.04)*	3 *(0.04)*	4 *(0.06)*		1 *(0.01)*				1 *(0.01)*	**268** ***(3.83)***
Pasteurella	21 *(0.30)*	4 *(0.06)*	33 *(0.47)*	30 *(0.43)*	90 *(1.29)*	69 *(0.99)*	5 *(0.07)*	3 *(0.04)*	1 *(0.01)*	1 *(0.01)*	2 *(0.03)*	7 *(0.10)*			1 *(0.01)*				**267** ***(3.81)***
Enterobacter	10 *(0.14)*	45 *(0.64)*	25 *(0.36)*	24 *(0.34)*	26 *(0.37)*	6 *(0.09)*	2 *(0.03)*	1 *(0.01)*	3 *(0.04)*										**142** ***(2.03)***
Klebsiella	6 *(0.09)*	55 *(0.79)*	13 *(0.19)*	15 *(0.21)*	30 *(0.43)*	1 *(0.01)*	3 *(0.04)*	5 *(0.07)*	3 *(0.04)*		2 *(0.03)*			1 *(0.01)*					**134** ***(1.91)***
Corynebacterium	58 *(0.83)*	4 *(0.06)*	12 *(0.17)*	13 *(0.19)*	7 *(0.10)*	2 *(0.03)*	3 *(0.04)*			1 *(0.01)*		1 *(0.01)*							**101** ***(1.44)***
Acinetobacter	8 *(0.11)*	5 *(0.07)*	11 *(0.16)*	12 *(0.17)*	12 *(0.17)*	1 *(0.01)*	2 *(0.03)*	1 *(0.01)*	2 *(0.03)*	1 *(0.01)*									**55** ***(0.79)***
Bordetella	1 *(0.01)*			1 *(0.01)*	47 *(0.67)*	1 *(0.01)*						1 *(0.01)*							**51** ***(0.73)***
Moraxella	9 *(0.13)*	1 *(0.01)*	9 *(0.13)*	7 *(0.10)*	17 *(0.24)*	4 *(0.06)*	2 *(0.03)*	1 *(0.01)*					1 *(0.01)*						**51** ***(0.73)***
Coagulase-unspecified Staphylococcus	14 *(0.20)*	7 *(0.10)*	5 *(0.07)*	10 *(0.14)*	3 *(0.04)*	1 *(0.01)*	2 *(0.03)*	1 *(0.01)*	1 *(0.01)*	1 *(0.01)*		2 *(0.03)*		1 *(0.01)*					**48** ***(0.69)***

	Pathology N (%)																		
Bacteria N (%)	Otitis	Kidney and urinary tract pathology	Skin and mucous membrane pathology	Unspecified	Respiratory pathology	Reproductive pathology	Ocular pathology	Digestive pathology	Bone pathology	Arthritis	Systemic pathology	Oral pathology	Abortion	Mastitis	Muscle pathology	Cardiac pathology	Omphalitis	Nervous system pathology	**Total N *(%)***
Serratia	5 *(0.07)*	7 *(0.10)*	6 *(0.09)*	11 *(0.16)*	6 *(0.09)*	1 *(0.01)*	4 *(0.06)*	1 *(0.01)*		1 *(0.01)*		1 *(0.01)*							**43** ***(0.61)***
Pantoea	8 *(0.11)*	7 *(0.10)*	14 *(0.20)*	7 *(0.10)*	5 *(0.07)*		2 *(0.03)*												**43** ***(0.61)***
Bacillus	9 *(0.13)*		7 *(0.10)*	10 *(0.14)*	3 *(0.04)*	4 *(0.06)*	2 *(0.03)*						1 *(0.01)*						**36** ***(0.51)***
Citrobacter	7 *(0.10)*	5 *(0.07)*	10 *(0.14)*	4 *(0.06)*	5 *(0.07)*	1 *(0.01)*	1 *(0.01)*												**33** ***(0.47)***
Other bacteria < 30 occurrences	41 *(0.59)*	19 *(0.27)*	32 *(0.46)*	26 *(0.37)*	42 *(0.60)*	10 *(0.14)*	9 *(0.13)*	11 *(0.16)*	1 *(0.01)*	0	2 *(0.03)*								**193** ***(2.76)***
Total N *(%)*	**1,814** ***(25.91)***	**1,468** ***(20.97)***	**1,409** ***(20.12)***	**850** ***(12.14)***	**609** ***(8.70)***	**334** ***(4.77)***	**171** ***(2.44)***	**118** ***(1.69)***	**71** ***(1.01)***	**59** ***(0.84)***	**46** ***(0.66)***	**29** ***(0.41)***	**7** ***(0.10)***	**7** ***(0.10)***	**4** ***(0.06)***	**4** ***(0.05)***	**1** ***(0.01)***	**1** ***(0.01)***	**7,002** ***(100.00)***

Table 3 - Dogs 2014 – Kidney and urinary tract pathology – All age groups included – *E. coli:* susceptibility to antibiotics (proportion) (N= 711)

Antibiotic	*Total (N)*	**% S**
Amoxicillin	*692*	**65**
Amoxicillin-Clavulanic ac.	*711*	**73**
Cephalexin	*699*	**86**
Cefoxitin	*569*	**91**
Cefoperazone	*57*	**98**
Cefovecin	*506*	**90**
Ceftiofur	*683*	**92**
Cefquinome 30 µg	*119*	**92**
Streptomycin 10 UI	*227*	**71**
Kanamycin 30 UI	*142*	**87**
Gentamicin 10 UI	*711*	**95**
Neomycin	*150*	**91**
Tetracycline	*203*	**66**
Doxycycline	*503*	**81**
Chloramphenicol	*103*	**77**
Florfenicol	*100*	**83**
Nalidixic ac.	*561*	**80**
Oxolinic ac.	*34*	**88**
Flumequine	*90*	**74**
Enrofloxacin	*710*	**87**
Marbofloxacin	*341*	**92**
Danofloxacin	*37*	**95**
Pradofloxacin	*388*	**83**
Trimethoprim-Sulfonamides	*710*	**85**

Table 4 - Dogs 2014 – Skin and mucous membrane pathology – All age groups included – *E. coli:* susceptibility to antibiotics (proportion) (N= 111)

Antibiotic	*Total (N)*	**% S**
Amoxicillin	*110*	**53**
Amoxicillin-Clavulanic ac.	*111*	**64**
Cephalexin	*110*	**78**
Cefoxitin	*97*	**90**
Cefovecin	*93*	**87**
Ceftiofur	*108*	**86**
Gentamicin 10 UI	*111*	**95**
Doxycycline	*95*	**55**
Nalidixic ac.	*100*	**73**
Enrofloxacin	*110*	**79**
Marbofloxacin	*39*	**77**
Pradofloxacin	*76*	**75**
Trimethoprim-Sulfonamides	*111*	**76**

Table 5 - Dogs 2014 – Otitis – All age groups included – *E. coli*: susceptibility to antibiotics (proportion) (N= 111)

Antibiotic	*Total (N)*	**% S**
Amoxicillin	*111*	**66**
Amoxicillin-Clavulanic ac.	*111*	**77**
Cephalexin	*108*	**81**
Cefoxitin	*92*	**92**
Cefovecin	*79*	**87**
Ceftiofur	*109*	**87**
Streptomycin 10 UI	*34*	**71**
Gentamicin 10 UI	*111*	**95**
Tetracycline	*37*	**68**
Doxycycline	*75*	**75**
Nalidixic ac.	*99*	**76**
Enrofloxacin	*110*	**81**
Marbofloxacin	*51*	**78**
Pradofloxacin	*60*	**77**
Trimethoprim-Sulfonamides	*111*	**86**

Table 6 - Dogs 2014 – All pathologies and age groups included – *Pasteurella*: susceptibility to antibiotics (proportion) (N= 267)

Antibiotic	*Total (N)*	**% S**
Amoxicillin	*266*	**95**
Amoxicillin-Clavulanic ac.	*267*	**95**
Cephalexin	*261*	**92**
Cefoxitin	*133*	**90**
Cefovecin	*133*	**92**
Ceftiofur	*252*	**93**
Cefquinome 30 µg	*56*	**93**
Streptomycin 10 UI	*128*	**72**
Kanamycin 30 UI	*121*	**87**
Gentamicin 10 UI	*267*	**93**
Neomycin	*63*	**78**
Tetracycline	*85*	**95**
Doxycycline	*183*	**96**
Florfenicol	*64*	**95**
Nalidixic ac.	*175*	**85**
Flumequine	*42*	**74**
Enrofloxacin	*267*	**91**
Marbofloxacin	*166*	**96**
Pradofloxacin	*101*	**77**
Trimethoprim	*68*	**85**
Trimethoprim-Sulfonamides	*266*	**92**

Table 7 - Dogs 2014 – Otitis - All age groups included – Coagulase-positive *Staphylococcus:* susceptibility to antibiotics (proportion) (N= 556)

Antibiotic	*Total (N)*	**% S**
Penicillin	*535*	**36**
Cefoxitin	*508*	**94**
Oxacillin	*76*	**100**
Cefovecin	*329*	**86**
Erythromycine	*534*	**69**
Tylosin	*74*	**77**
Spiramycin	*269*	**75**
Lincomycin	*541*	**69**
Pristinamycin	*33*	**100**
Streptomycin 10 UI	*248*	**71**
Kanamycin 30 UI	*196*	**71**
Gentamicin 10 UI	*554*	**88**
Neomycin	*127*	**89**
Tetracycline	*284*	**64**
Doxycycline	*269*	**93**
Chloramphenicol	*109*	**82**
Florfenicol	*47*	**96**
Enrofloxacin	*529*	**81**
Marbofloxacin	*349*	**84**
Danofloxacin	*63*	**97**
Pradofloxacin	*258*	**71**
Trimethoprim-Sulfonamides	*549*	**87**
Fusidic ac.	*361*	**97**
Rifampicin	*88*	**99**

Table 8 - Dogs 2014 – Skin and mucous membrane pathology – All age groups included – Coagulase-positive *Staphylococcus:* susceptibility to antibiotics (proportion) (N= 765)

Antibiotic	*Total (N)*	**% S**
Penicillin	*689*	**25**
Cefoxitin	*715*	**93**
Oxacillin	*87*	**94**
Cefovecin	*443*	**81**
Erythromycine	*692*	**61**
Tylosin	*104*	**76**
Spiramycin	*287*	**68**
Lincomycin	*761*	**61**
Pristinamycin	*44*	**98**
Streptomycin 10 UI	*267*	**63**
Kanamycin 30 UI	*272*	**59**
Tobramycin	*53*	**83**
Gentamicin 10 UI	*764*	**86**
Neomycin	*179*	**75**
Tetracycline	*354*	**60**
Doxycycline	*410*	**88**
Chloramphenicol	*139*	**73**
Florfenicol	*59*	**98**
Enrofloxacin	*741*	**80**
Marbofloxacin	*465*	**85**
Danofloxacin	*78*	**91**
Pradofloxacin	*403*	**71**
Trimethoprim-Sulfonamides	*753*	**81**
Fusidic ac.	*516*	**97**
Rifampicin	*116*	**98**

Table 9 - Dogs 2014 – Kidney and urinary tract pathology – All age groups included – Coagulase-positive *Staphylococcus:* susceptibility to antibiotics (proportion) (N= 191)

Antibiotic	*Total (N)*	**% S**
Penicillin	*188*	**31**
Cefoxitin	*182*	**92**
Cefovecin	*104*	**88**
Erythromycine	*189*	**56**
Spiramycin	*72*	**64**
Lincomycin	*189*	**59**
Streptomycin 10 UI	*62*	**56**
Kanamycin 30 UI	*83*	**48**
Tobramycin	*33*	**85**
Gentamicin 10 UI	*190*	**88**
Neomycin	*33*	**79**
Tetracycline	*73*	**51**
Doxycycline	*118*	**88**
Enrofloxacin	*179*	**79**
Marbofloxacin	*116*	**82**
Pradofloxacin	*92*	**71**
Trimethoprim-Sulfonamides	*191*	**85**
Fusidic ac.	*115*	**96**

Table 10 - Dogs 2014 – Otitis - All age groups included – *Streptococcus* spp: susceptibility to antibiotics (proportion) (N= 187)

Antibiotic	*Total (N)*	**% S**
Oxacillin	*101*	**86**
Cefovecin	*99*	**80**
Erythromycine	*183*	**73**
Tylosin	*42*	**86**
Spiramycin	*111*	**80**
Lincomycin	*184*	**76**
Streptomycin 500 µg	*115*	**87**
Kanamycin 1000 µg	*88*	**94**
Gentamicin 500 µg	*115*	**95**
Tetracycline	*115*	**27**
Doxycycline	*72*	**69**
Chloramphenicol	*31*	**61**
Florfenicol	*35*	**94**
Enrofloxacin	*180*	**29**
Marbofloxacin	*124*	**73**
Pradofloxacin	*56*	**13**
Trimethoprim-Sulfonamides	*183*	**80**

Table 11 - Dogs 2014 – Skin and mucous membrane pathology – All age groups included – *Streptococcus spp :* susceptibility to antibiotics (proportion) (N= 93)

Antibiotic	*Total (N)*	**% S**
Oxacillin	*50*	**96**
Cefovecin	*48*	**88**
Erythromycine	*89*	**80**
Spiramycin	*34*	**91**
Lincomycin	*92*	**78**
Streptomycin 500 µg	*51*	**88**
Kanamycin 1000 µg	*43*	**95**
Gentamicin 500 µg	*52*	**94**
Tetracycline	*38*	**26**
Doxycycline	*56*	**63**
Enrofloxacin	*81*	**37**
Marbofloxacin	*51*	**71**
Pradofloxacin	*32*	**22**
Trimethoprim-Sulfonamides	*75*	**84**

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Annex 11

Cats

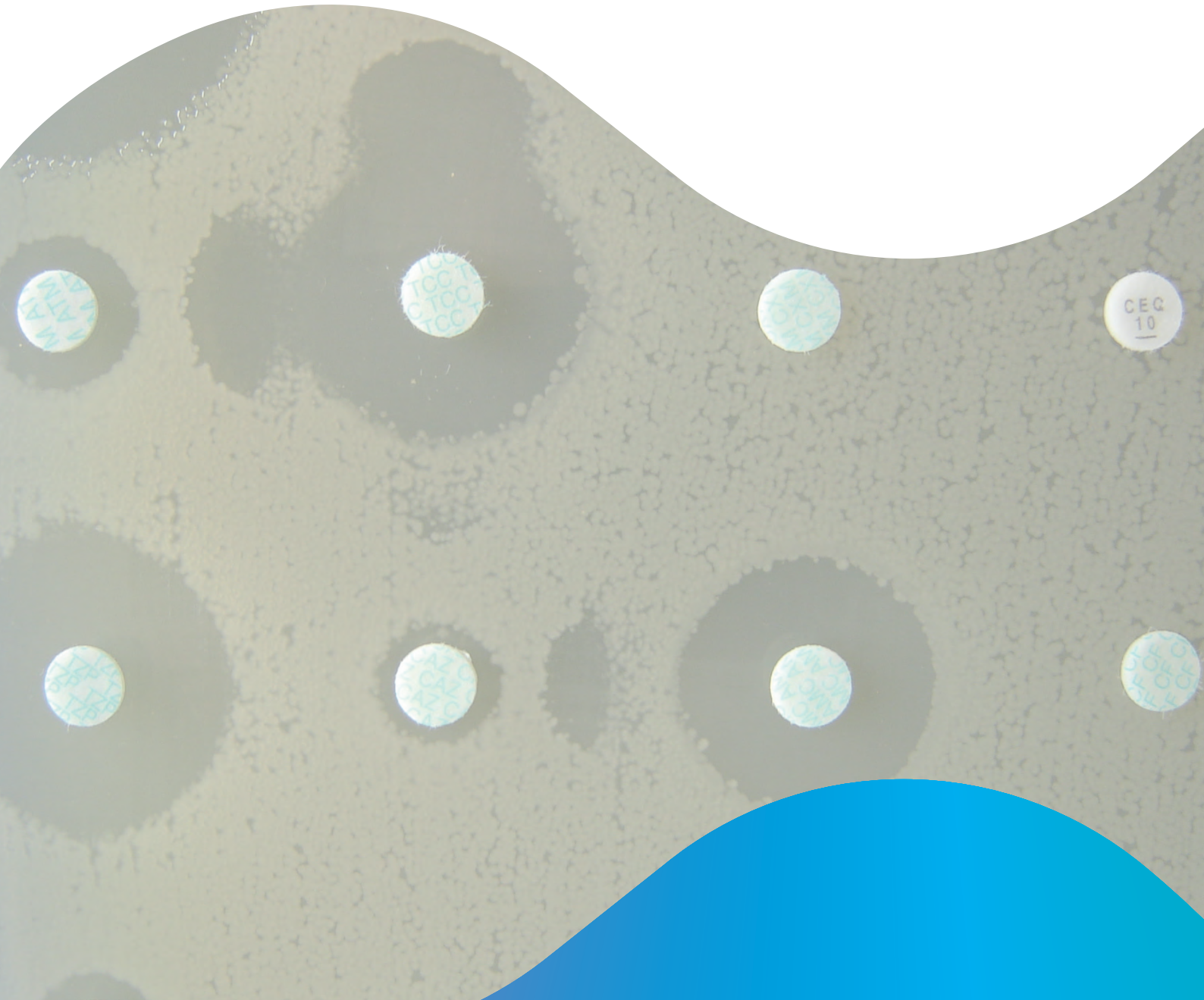


Figure 1 - Cats 2014 – Number of antibiograms by age group and pathology

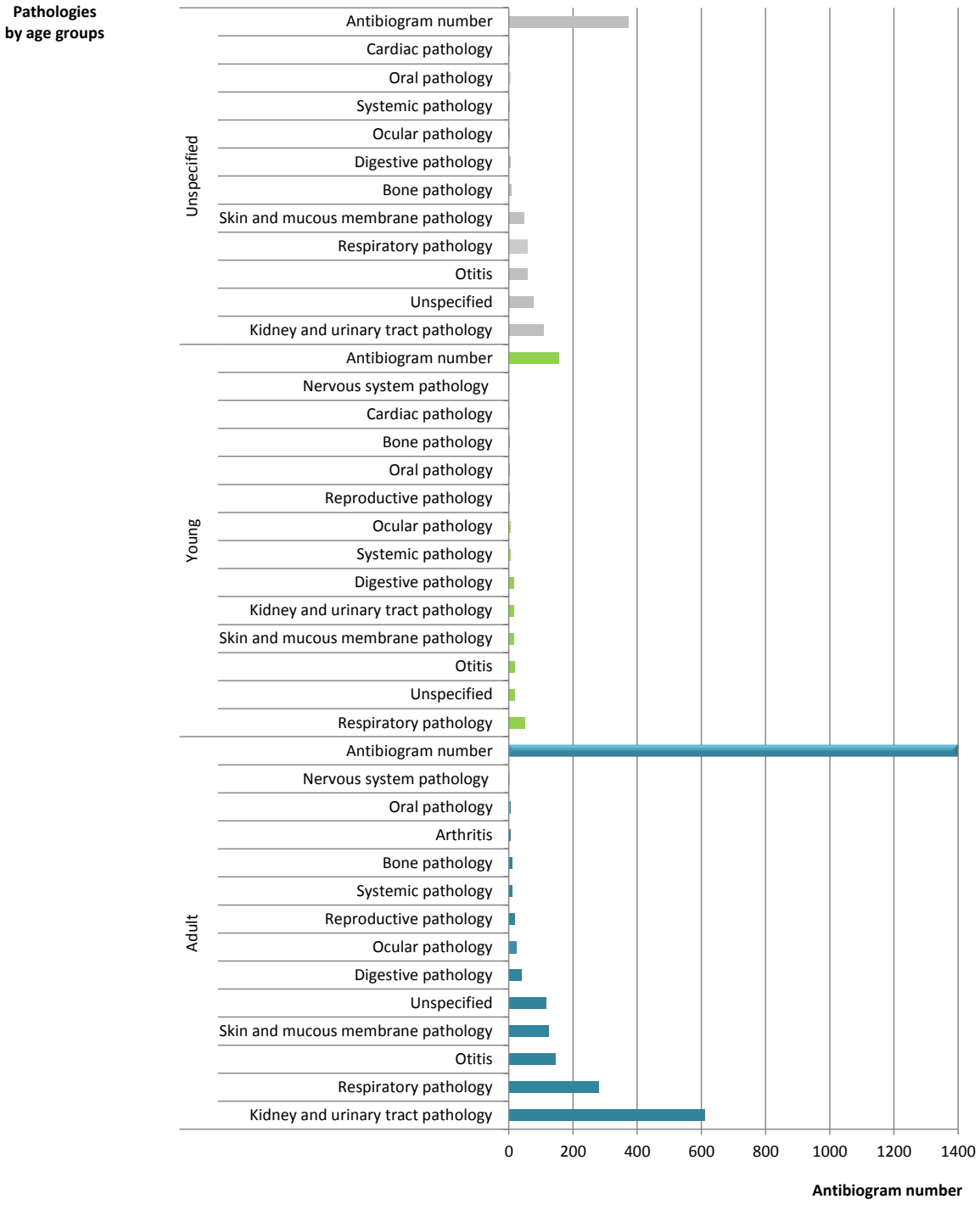
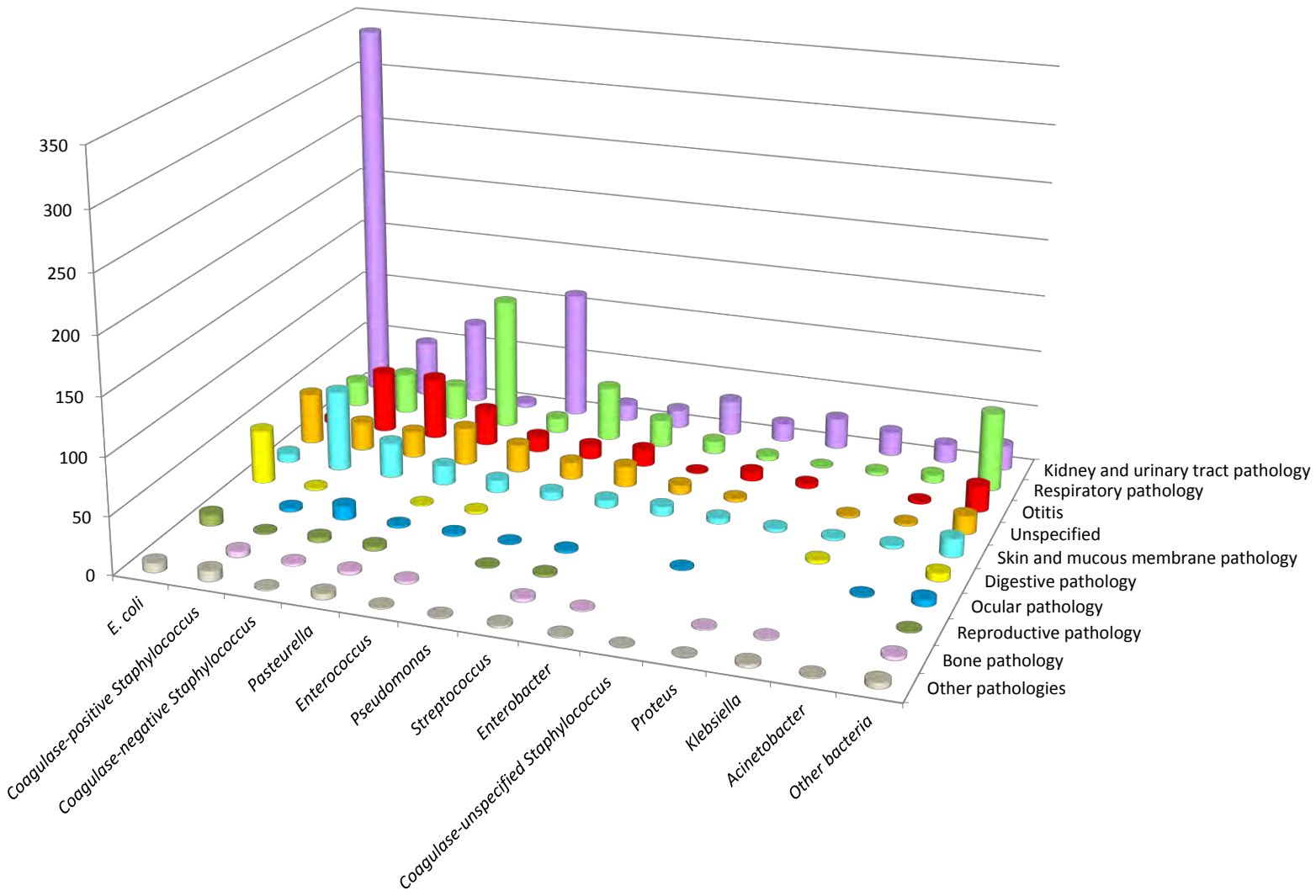


Table 1 - Cats 2014 – Number of antibiograms by age group and pathology

	Age group N *(%)*			
Pathology N (%)	Adult	Unspecified	Young	**Total N *(%)***
Kidney and urinary tract pathology	612 *(31.78)*	110 *(5.71)*	17 *(0.88)*	**739 *(38.37)***
Respiratory pathology	280 *(14.54)*	55 *(2.86)*	51 *(2.65)*	**386 *(20.04)***
Otitis	147 *(7.63)*	59 *(3.06)*	19 *(0.99)*	**225 *(11.68)***
Unspecified	118 *(6.13)*	77 *(4.00)*	19 *(0.99)*	**214 *(11.11)***
Skin and mucous membrane pathology	125 *(6.49)*	47 *(2.44)*	17 *(0.88)*	**189 *(9.81)***
Digestive pathology	40 *(2.08)*	6 *(0.31)*	16 *(0.83)*	**62 *(3.22)***
Ocular pathology	22 *(1.14)*	4 *(0.21)*	4 *(0.21)*	**30 *(1.56)***
Reproductive pathology	20 *(1.04)*		3 *(0.16)*	**23 *(1.19)***
Bone pathology	10 *(0.52)*	9 *(0.47)*	2 *(0.10)*	**21 *(1.09)***
Systemic pathology	12 *(0.62)*	3 *(0.16)*	4 *(0.21)*	**19 *(0.99)***
Oral pathology	3 *(0.16)*	2 *(0.10)*	2 *(0.10)*	**7 *(0.36)***
Arthritis	6 *(0.31)*			**6 *(0.31)***
Cardiac pathology		2 *(0.10)*	1 *(0.05)*	**3 *(0.16)***
Nervous system pathology	1 *(0.05)*		1 *(0.05)*	**2 *(0.10)***
Total N (%)	**1,396 *(72.48)***	**374 *(19.42)***	**156 *(8.10)***	**1,926 *(100.00)***

Figure 2 - Cats 2014 – Number of antibiograms by bacterial group and pathology



Note: *all values for pathologies >1% and bacterial groups having more than 30 occurrences are represented. Detailed values are presented in table 2 below..*

Table 2 - Cats 2014 – Number of antibiograms by bacterial group and pathology

	Pathology N (%)														
Bacteria N (%)	Kidney and urinary tract pathology	Respiratory pathology	Otitis	Unspecified	Skin and mucous membrane pathology	Digestive pathology	Ocular pathology	Reproductive pathology	Bone pathology	Systemic pathology	Oral pathology	Arthritis	Cardiac pathology	Nervous system pathology	**Total N *(%)***
E. coli	337 *(17.50)*	23 *(1.19)*	5 *(0.26)*	45 *(2.34)*	8 *(0.42)*	47 *(2.44)*		10 *(0.52)*		8 *(0.42)*					483 *(25.08)*
Staphylococcus à coagulase positive	49 *(2.54)*	36 *(1.87)*	54 *(2.80)*	25 *(1.30)*	71 *(3.69)*	2 *(0.10)*	3 *(0.16)*	1 *(0.05)*	5 *(0.26)*	3 *(0.16)*	3 *(0.16)*	2 *(0.10)*	1 *(0.05)*		255 *(13.24)*
Staphylococcus à coagulase négative	73 *(3.79)*	31 *(1.61)*	55 *(2.86)*	23 *(1.19)*	31 *(1.61)*		12 *(0.62)*	4 *(0.21)*	2 *(0.10)*					1 *(0.05)*	232 *(12.05)*
Pasteurella	4 *(0.21)*	116 *(6.02)*	32 *(1.66)*	33 *(1.71)*	17 *(0.88)*	1 *(0.05)*	2 *(0.10)*	4 *(0.21)*	3 *(0.16)*		2 *(0.10)*	2 *(0.10)*		1 *(0.05)*	217 *(11.27)*
Enterococcus	112 *(5.82)*	13 *(0.67)*	14 *(0.73)*	24 *(1.25)*	11 *(0.57)*	2 *(0.10)*	2 *(0.10)*		2 *(0.10)*			1 *(0.05)*			181 *(9.4)*
Pseudomonas	15 *(0.78)*	48 *(2.49)*	12 *(0.62)*	15 *(0.78)*	7 *(0.36)*		1 *(0.05)*	1 *(0.05)*			1 *(0.05)*				100 *(5.19)*
Streptococcus	16 *(0.83)*	24 *(1.25)*	15 *(0.78)*	18 *(0.93)*	7 *(0.36)*		2 *(0.10)*	2 *(0.10)*	3 *(0.16)*			1 *(0.05)*	1 *(0.05)*		89 *(4.62)*
Enterobacter	31 *(1.61)*	11 *(0.57)*	1 *(0.05)*	8 *(0.42)*	8 *(0.42)*				1 *(0.05)*	1 *(0.05)*					61 *(3.17)*
Coagulase-unspecified Staphylococcus	16 *(0.83)*	4 *(0.21)*	8 *(0.42)*	3 *(0.16)*	5 *(0.26)*		1 *(0.05)*								37 *(1.92)*
Proteus	27 *(1.40)*	1 *(0.05)*	4 *(0.21)*		3 *(0.16)*				1 *(0.05)*						36 *(1.87)*
Klebsiella	21 *(1.09)*	3 *(0.16)*		2 *(0.10)*	2 *(0.10)*	3 *(0.16)*			1 *(0.05)*	3 *(0.16)*					35 *(1.82)*
Acinetobacter	16 *(0.83)*	7 *(0.36)*	2 *(0.10)*	2 *(0.10)*	3 *(0.16)*		1 *(0.05)*				1 *(0.05)*				32 *(1.66)*
Other bacteria < 30 occurrences	22 *(1.14)*	69 *(3.58)*	23 *(1.19)*	16 *(0.83)*	16 *(0.83)*	7 *(0.36)*	6 *(0.31)*	1 *(0.05)*	3 *(0.16)*	4 *(0.21)*	0	0	1 *(0.05)*	0	168 *(8.72)*
Total N *(%)*	**739 *(38.37)***	**386 *(20.04)***	**225 *(11.68)***	**214 *(11.11)***	**189 *(9.81)***	**62 *(3.22)***	**30 *(1.56)***	**23 *(1.19)***	**21 *(1.09)***	**19 *(0.99)***	**7 *(0.36)***	**6 *(0.31)***	**3 *(0.16)***	**2 *(0.10)***	**1,926 *(100.00)***

Table 3 - Cats 2014 – All pathologies and age groups included – *E. coli:* susceptibility to antibiotics (proportion) (N= 483)

Antibiotic	*Total (N)*	**% S**
Amoxicillin	*461*	**64**
Amoxicillin-Clavulanic ac.	*467*	**77**
Cephalexin	*461*	**85**
Cefoxitin	*374*	**92**
Cefuroxime	*32*	**78**
Cefoperazone	*32*	**81**
Cefovecin	*302*	**90**
Ceftiofur	*455*	**91**
Cefquinome 30 µg	*120*	**93**
Streptomycin 10 UI	*188*	**59**
Kanamycin 30 UI	*122*	**92**
Gentamicin 10 UI	*467*	**97**
Neomycin	*132*	**89**
Tetracycline	*171*	**62**
Doxycycline	*298*	**77**
Chloramphenicol	*63*	**78**
Florfenicol	*98*	**90**
Nalidixic ac.	*364*	**84**
Flumequine	*71*	**69**
Enrofloxacin	*466*	**87**
Marbofloxacin	*251*	**86**
Pradofloxacin	*220*	**86**
Trimethoprim-Sulfonamides	*478*	**83**

Table 4 - Cats 2014 – Kidney and urinary tract pathology – All age groups included – *E. coli:* susceptibility to antibiotics (proportion) (N= 337)

Antibiotic	*Total (N)*	**% S**
Amoxicillin	*336*	**65**
Amoxicillin-Clavulanic ac.	*337*	**79**
Cephalexin	*334*	**85**
Cefoxitin	*271*	**93**
Cefovecin	*245*	**90**
Ceftiofur	*326*	**91**
Cefquinome 30 µg	*50*	**90**
Streptomycin 10 UI	*122*	**61**
Kanamycin 30 UI	*62*	**90**
Gentamicin 10 UI	*336*	**98**
Neomycin	*76*	**88**
Tetracycline	*94*	**57**
Doxycycline	*244*	**77**
Chloramphenicol	*53*	**77**
Florfenicol	*38*	**95**
Nalidixic ac.	*272*	**86**
Flumequine	*32*	**59**
Enrofloxacin	*335*	**87**
Marbofloxacin	*161*	**84**
Pradofloxacin	*178*	**86**
Trimethoprim-Sulfonamides	*335*	**83**

Table 5 - Cats 2014 – Respiratory pathology – All age groups included – *Pasteurella:* susceptibility to antibiotics (proportion) (N= 116)

Antibiotic	*Total (N)*	**% S**
Amoxicillin	*116*	**98**
Amoxicillin-Clavulanic ac.	*116*	**98**
Cephalexin	*114*	**98**
Cefoxitin	*87*	**99**
Cefovecin	*94*	**99**
Ceftiofur	*107*	**99**
Gentamicin 10 UI	*115*	**94**
Doxycycline	*94*	**98**
Nalidixic ac.	*102*	**94**
Enrofloxacin	*115*	**98**
Marbofloxacin	*41*	**98**
Pradofloxacin	*73*	**89**
Trimethoprim-Sulfonamides	*115*	**95**

Table 6 - Cats 2014 – All pathologies and age groups included – Coagulase-positive *Staphylococcus:* susceptibility to antibiotics (proportion) (N= 255)

Antibiotic	*Total (N)*	**% S**
Penicillin	*246*	**37**
Cefoxitin	*240*	**81**
Cefovecin	*147*	**80**
Erythromycine	*246*	**67**
Tylosin	*40*	**83**
Spiramycin	*109*	**83**
Lincomycin	*252*	**74**
Streptomycin 10 UI	*97*	**72**
Kanamycin 30 UI	*107*	**72**
Gentamicin 10 UI	*253*	**86**
Neomycin	*50*	**92**
Tetracycline	*113*	**80**
Doxycycline	*137*	**90**
Chloramphenicol	*47*	**87**
Enrofloxacin	*241*	**77**
Marbofloxacin	*158*	**80**
Danofloxacin	*30*	**90**
Pradofloxacin	*122*	**62**
Trimethoprim-Sulfonamides	*251*	**88**
Fusidic ac.	*157*	**92**
Rifampicin	*31*	**97**

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Graphic design: ANSES Maisons-Alfort

Photo credits: ANSES – Lyon Laboratory

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