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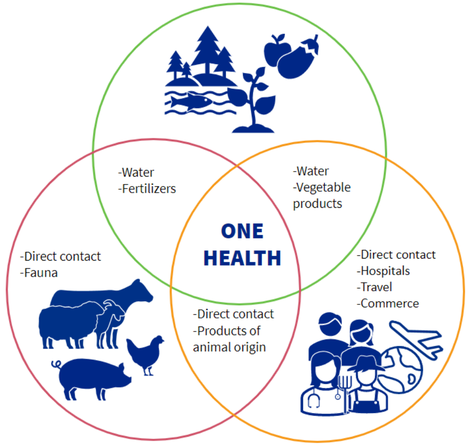

Antibiotico resistenza nel settore veterinario

Dr. Antonio Parisi

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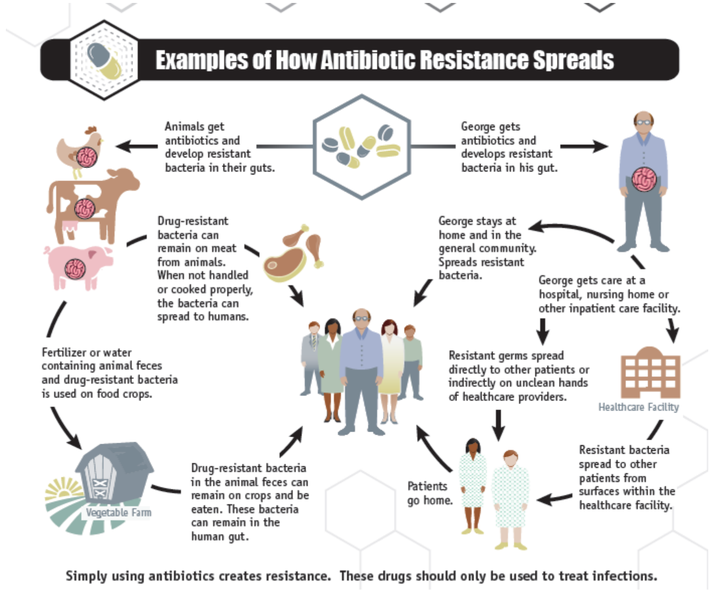

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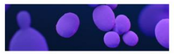
Urgent Threats

These germs are public health threats that require urgent and aggressive action:


CARBAPENEM-RESISTANT
ACINETOBACTER


CANDIDA AURIS


CLOSTRIDIOIDES DIFFICILE


CARBAPENEM-RESISTANT
ENTEROBACTERIACEAE


DRUG-RESISTANT
NEISSERIA GONORRHOEAE

CDC

Serious Threats

These germs are public health threats that require prompt and sustained action:


DRUG-RESISTANT
CAMPYLOBACTER


DRUG-RESISTANT
CANDIDA


ESBL-PRODUCING
ENTEROBACTERIACEAE


VANCOMYCIN-RESISTANT
ENTEROCOCCI


MULTIDRUG-RESISTANT
PSEUDOMONAS AERUGINOSA


DRUG-RESISTANT
NONTYPHOIDAL *SALMONELLA*


DRUG-RESISTANT
***SALMONELLA* SEROTYPE TYPHI**


DRUG-RESISTANT
SHIGELLA


METHICILLIN-RESISTANT
STAPHYLOCOCCUS AUREUS


DRUG-RESISTANT
STREPTOCOCCUS PNEUMONIAE


DRUG-RESISTANT
TUBERCULOSIS

Concerning Threats

These germs are public health threats that require careful monitoring and prevention action:


ERYTHROMYCIN-RESISTANT
GROUP A *STREPTOCOCCUS*


CLINDAMYCIN-RESISTANT
GROUP B *STREPTOCOCCUS*

Watch List

- Azole-resistant *Aspergillus fumigatus (A. fumigatus)*
- Drug-resistant *Mycoplasma genitalium (M. genitalium)*
- Drug-resistant *Bordetella pertussis (B. pertussis)*

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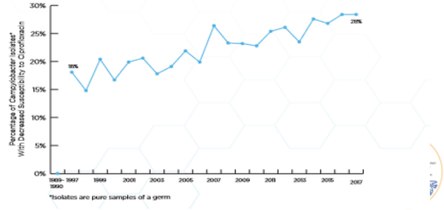
WHAT YOU NEED TO KNOW

- *Campylobacter* causes an estimated 1.5 million infections and $270 million in direct medical costs every year. Of those infections, 29% have decreased susceptibility to fluoroquinolones (e.g., ciprofloxacin) or macrolides (e.g., azithromycin), the antibiotics used to treat severe *Campylobacter* infections.
- *Campylobacter* spreads to people through raw or undercooked chicken, unpasteurized milk, contaminated food and water, and through direct contact with animals.
- *Campylobacter* infections with decreased susceptibility are more common in low- and middle-income countries, putting travelers at risk for infections that may be harder to treat.

RESISTANCE OVER TIME

The percentage of *Campylobacter* with decreased susceptibility to ciprofloxacin has almost doubled in 20 years, limiting treatment options for patients.



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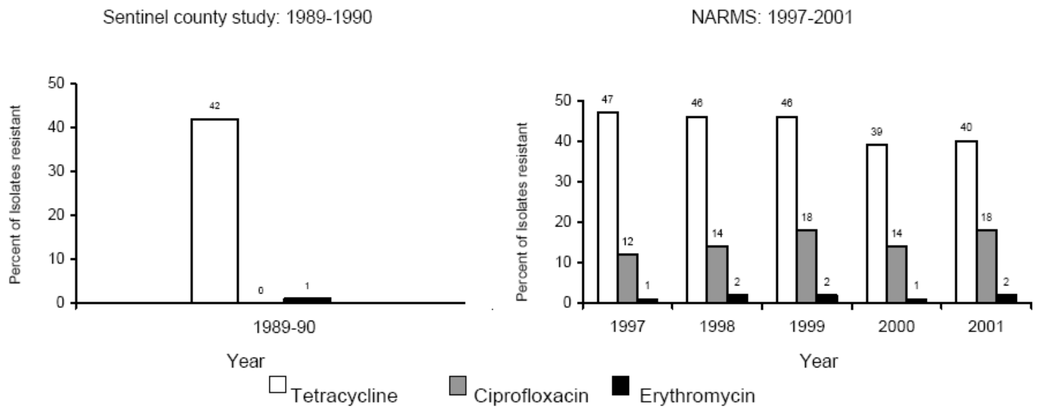
Summary of Long Term Changes in Antimicrobial Resistance in Campylobacter jejuni Isolates, 1989-2001



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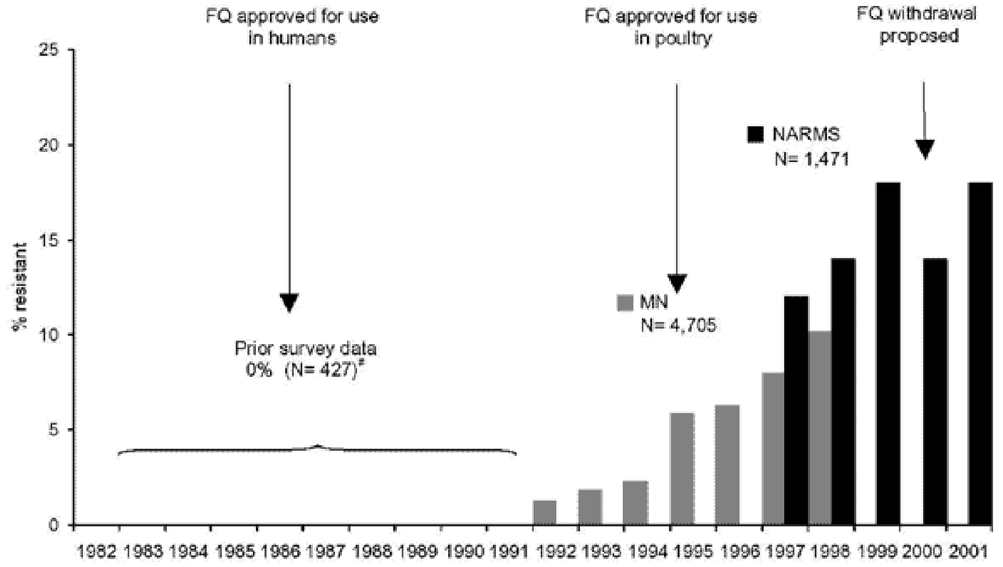

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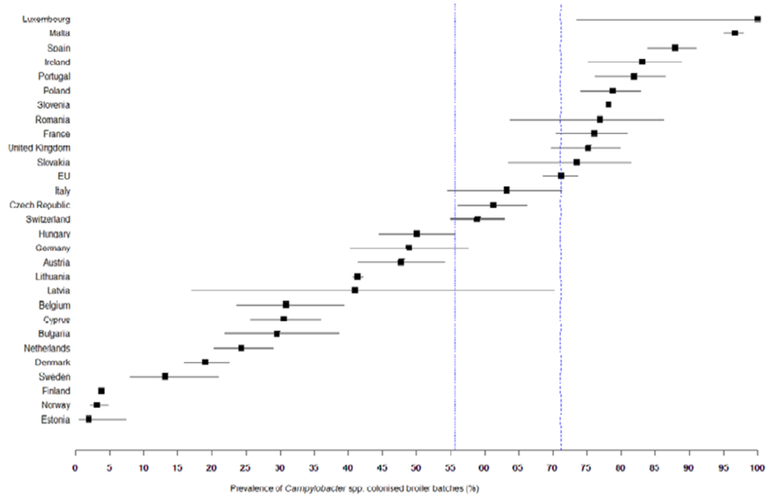
efsa
European Food Safety Authority

Figure CA8. Prevalence[1] of Campylobacter-colonised broiler batches in EU[2], baseline survey 2008



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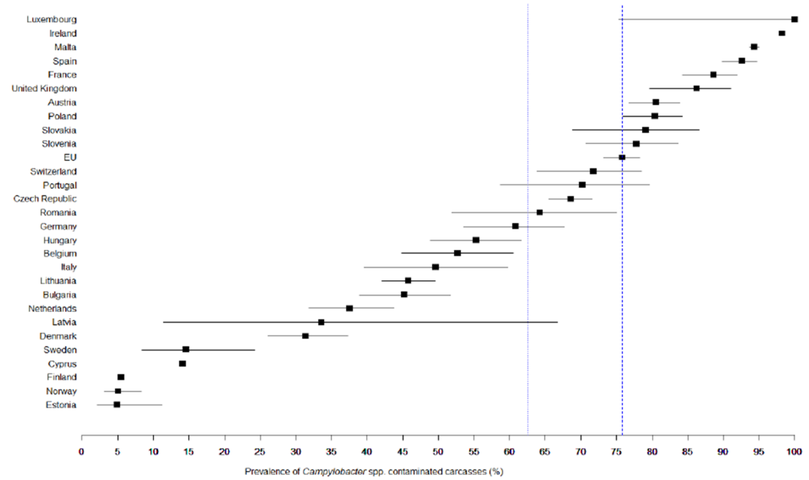
efsa
European Food Safety Authority

Figure CA5. Prevalence[1] of Campylobacter-*contaminated broiler carcasses in EU[2], baseline survey 2008*



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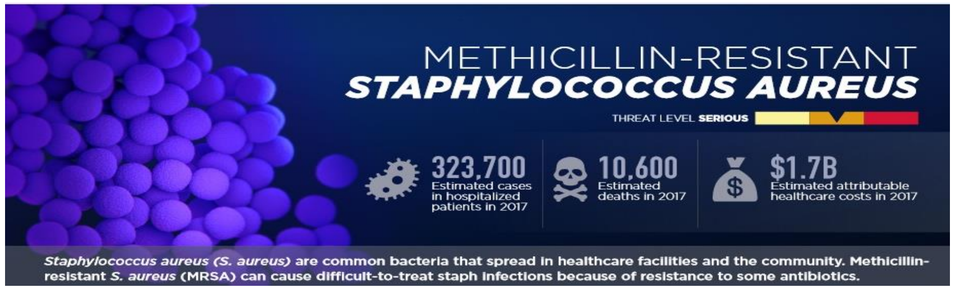
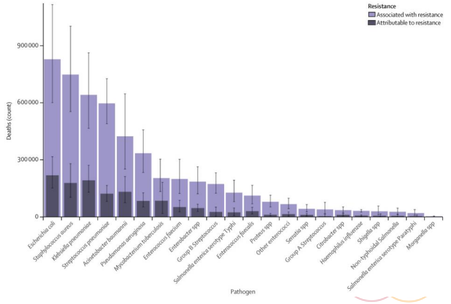


In 2019, six pathogens were each responsible for more than 250 000 deaths associated with AMR: *E coli, Staphylococcus aureus, K pneumoniae, S pneumoniae, Acinetobacter baumannii,* and *Pseudomonas aeruginosa*, by order of number of deaths.
Together, these six pathogens were responsible for 929 000 (95% UI 660 000–1 270 000) of 1·27 million deaths (0·911–1·71) attributable to AMR and 3·57 million (2·62–4·78) of 4·95 million deaths (3·62–6·57) associated with AMR globally in 2019.

Lancet 2022; 399: 629–55



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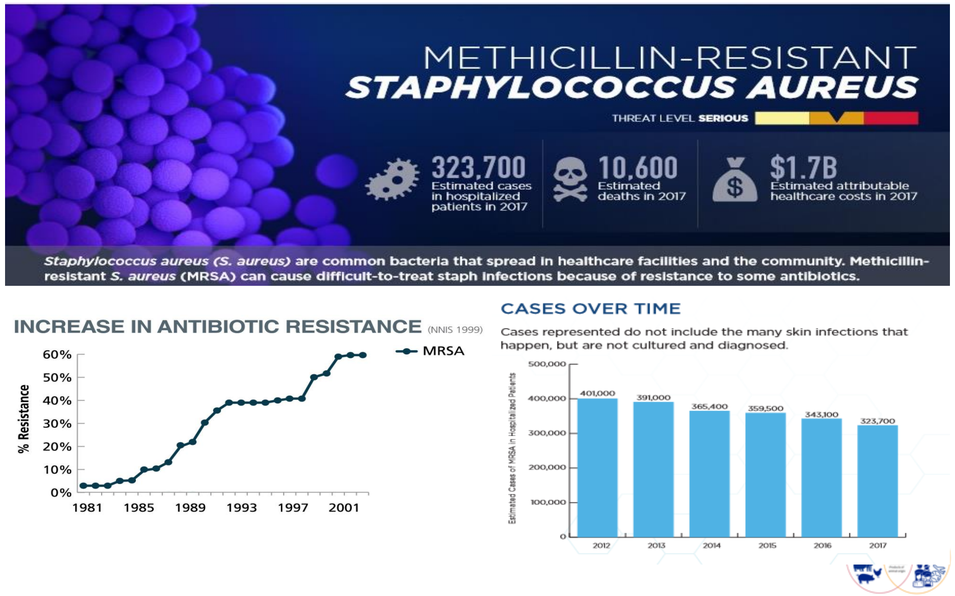

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ELSEVIER
Food Microbiology
Volume 58, September 2016, Pages 36-42

Prevalence, antimicrobial susceptibility and molecular typing of Methicillin-Resistant *Staphylococcus aureus* (MRSA) in bulk tank milk from southern Italy

A. Parisi [a], M. Caruso [a], G. Normanno [b], L. Latorre [a], R. Sottili [a], A. Miccolupo [a], R. Fraccalvieri [a], G.Santagada [a]

ELSEVIER
Small Ruminant Research
Volume 135, February 2016, Pages 26-31

Methicillin-resistant *Staphylococcus aureus* (MRSA) in sheep and goat bulk tank milk from Southern Italy ☆

M. Caruso, L. Latorre, G. Santagada, R. Fraccalvieri, A. Miccolupo, R. Sottili, L. Palazzo, A. Parisi

Foodborne Pathogens and Disease, Vol. 14, No. 12 | Original Articles

High Occurrence of Methicillin-Resistant *Staphylococcus aureus* in Horses at Slaughterhouses Compared with Those for Recreational Activities: A Professional and Food Safety Concern?

Antonio Parisi, Marta Caruso, Giovanni Normanno, Laura Latorre, Angela Miccolupo, Rosa Fraccalvieri, Francesco Intini, Teresa Manginelli, and Gianfranco Santagada

Published Online: 1 Dec 2017 | https://doi.org/10.1089/fpd.2017.2300

ELSEVIER
Veterinary Microbiology
Volume 167, Issues 3–4, 27 December 2013, Pages 734-736

Short Communication

Characterisation of a catalase-negative methicillin-resistant *Staphylococcus aureus* isolate from a dog

Marialaura Corrente [a], Gianpiero Ventrella [a], Maria Fiorella Greco [a], Vito Martella [a], Antonio Parisi [b], Domenico Buonavoglia [a]

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Food Microbiology 82 (2019) 287–293

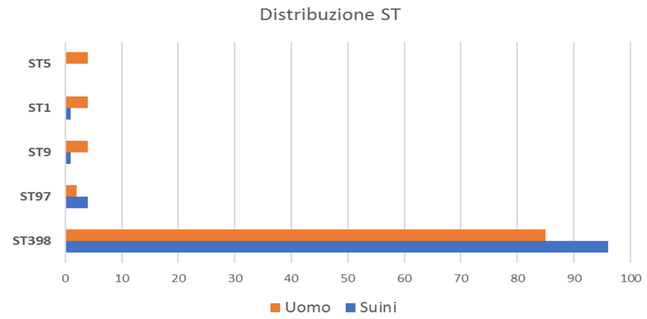
Contents lists available at ScienceDirect

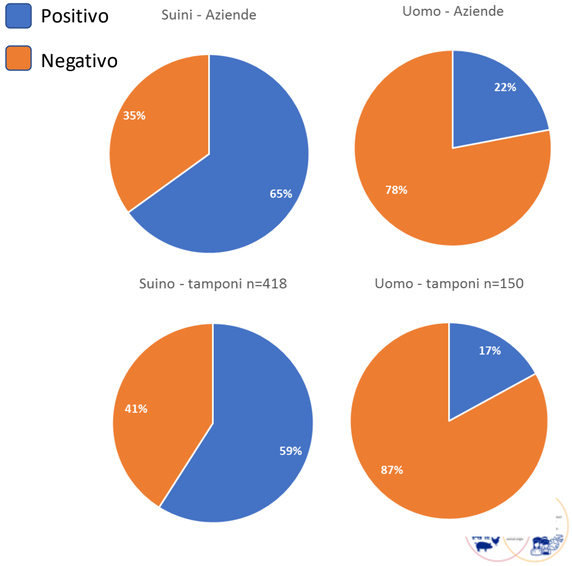
Food Microbiology

journal homepage: www.elsevier.com/locate/fm

MRSA in swine, farmers and abattoir workers in Southern Italy

Antonio Parisi[a], Marta Caruso[a], Giovanni Normanno[b,*], Laura Latorre[a], Angela Miccolupo[a], Rosa Fraccalvieri[a], Francesco Intini[c], Teresa Manginelli[c], Gianfranco Santagada[a]





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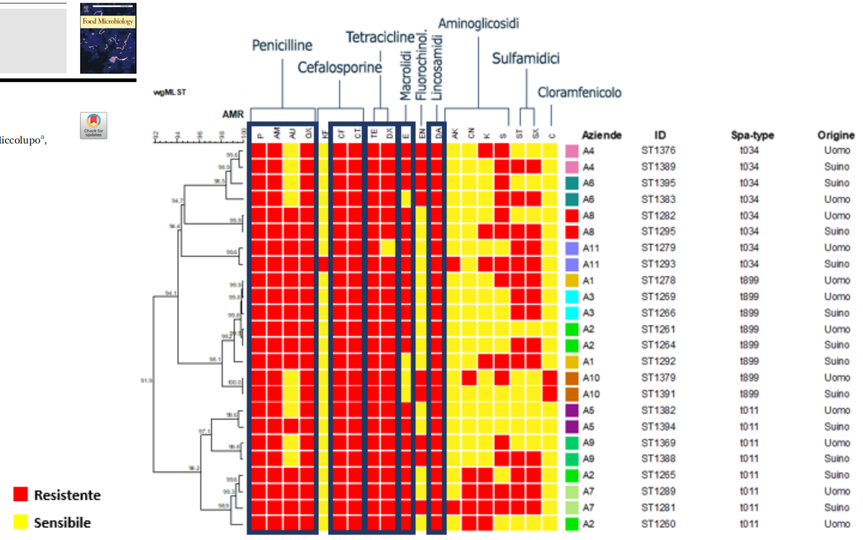

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ELSEVIER
International Journal of Food Microbiology
Volume 117, Issue 2, 30 June 2007, Pages 219-222

Short communication

Methicillin-resistant *Staphylococcus aureus* (MRSA) in foods of animal origin product in Italy

G. Normanno [a], M. Corrente [a], G. La Salandra [b], A. Dambrosio [a], N.C. Quaglia [a], A. Parisi [b], G. Greco [a], A.L. Bellacicco [a], S. Virgilio [c], G.V. Celano [a]

Journal of Food Science
A Publication of the Institute of Food Technologists

Food Microbiology & Safety

Biofilm Formation and Its Relationship with the Molecular Characteristics of Food-Related Methicillin-Resistant *Staphylococcus aureus* (MRSA)

Alberto Vergara, Giovanni Normanno, Pierluigi Di Ciccio, Francesca Pedonese, Roberta Nuvoloni, Antonio Parisi, Gianfranco Santagada, Angelo Colagiorgi, Emanuela Zanardi, Sergio Ghidini, Adriana Ianieri

ELSEVIER
International Journal of Food Microbiology
Volume 98, Issue 1, 15 January 2005, Pages 73-79

Coagulase-positive Staphylococci and *Staphylococcus aureus* in food products marketed in Italy

G. Normanno [a], A. Firinu [b], S. Virgilio [b], G. Mula [b], A. Dambrosio [a], A. Poggiu [b], L. Decastelli [c], R. Mioni [d], S. Scuota [e], G. Bolzoni [f], E. Di Giannatale [g], A.P. Salinetti [h], G. La Salandra [i], M. Bartoli [j], F. Zuccon [b], T. Pirino [b], S. Sias [b], A. Parisi [i] ... G.V. Celano [a]

ELSEVIER
International Journal of Food Microbiology
Volume 115, Issue 3, 20 April 2007, Pages 290-296

Occurrence, characterization and antimicrobial resistance of enterotoxigenic *Staphylococcus aureus* isolated from meat and dairy products

G. Normanno [a], G. La Salandra [b], A. Dambrosio [a], N.C. Quaglia [a], M. Corrente [a], A. Parisi [b], G. Santagada [b], A. Firinu [c], E. Crisetti [b], G.V. Celano [a]

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Urgent Threats

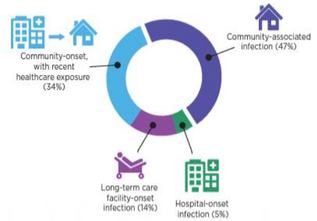
These germs are public health threats that require urgent and aggressive action:

CARBAPENEM-RESISTANT
ENTEROBACTERIACEAE

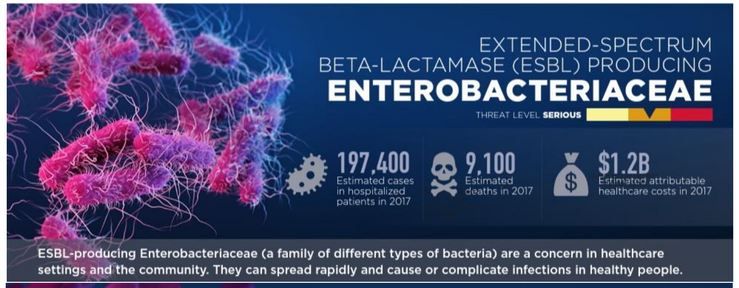
Serious Threats

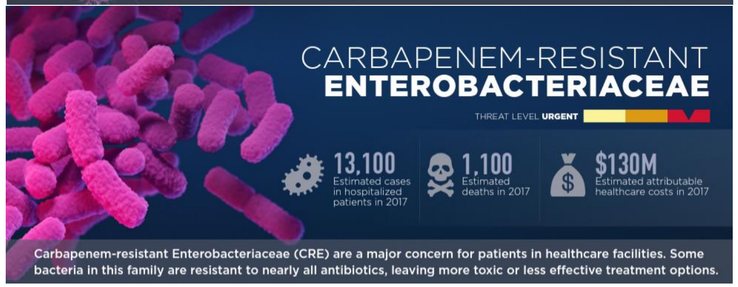
These germs are public health threats that require prompt and sustained action:

ESBL-PRODUCING
ENTEROBACTERIACEAE



Data shows infections by epidemiological classification (the setting where patients most likely got the infection based on clinical information).





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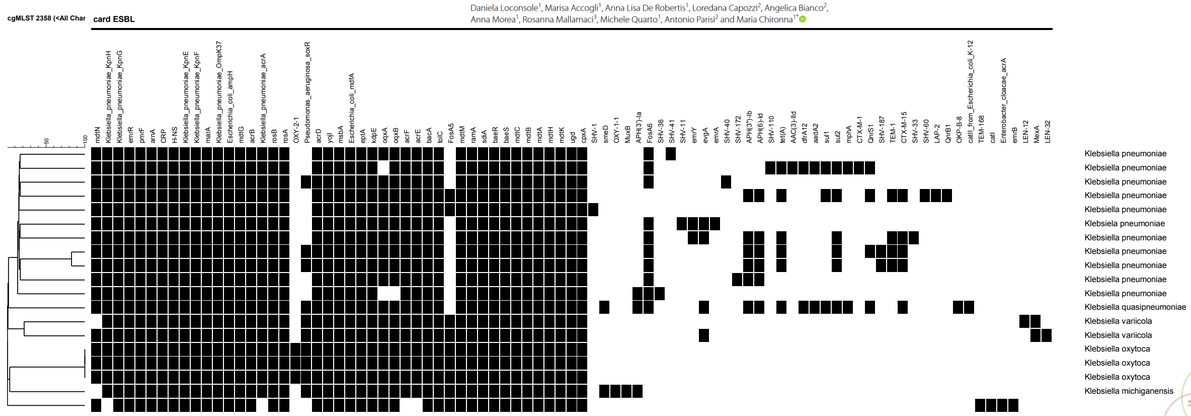
Loconsole et al. Ann Clin Microbiol Antimicrob (2020) 19:24
https://doi.org/10.1186/s12941-020-00366-y

Annals of Clinical Microbiology and Antimicrobials

RESEARCH Open Access

Emerging high-risk ST101 and ST307 carbapenem-resistant *Klebsiella pneumoniae* clones from bloodstream infections in Southern Italy

Daniela Loconsole[1], Marisa Accogli[1], Anna Lisa De Robertis[1], Loredana Capozzi[2], Angelica Bianco[2], Anna Morea[1], Rosanna Mallamaci[3], Michele Quarto[1], Antonio Parisi[2] and Maria Chironna[1*]



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CARBAPENEM-RESISTANT
ENTEROBACTERIACEAE

antibiotics

MDPI

Article

Survey on Carbapenem-Resistant Bacteria in Pigs at Slaughter and Comparison with Human Clinical Isolates in Italy

Silvia Bonardi [1,*], Clotilde Silvia Cabassi [1], Gerardo Manfreda [2], Antonio Parisi [3], Enrico Fiaccadori [4], Alice Sabatino [1], Sandro Cavirani [1], Cristina Bacci [1], Martina Rega [1], Costanza Spadini [1], Mattia Iannarelli [1], Cecilia Crippa [2], Ferdinando Ruocco [5] and Frédérique Pasquali [2]

Source	ID Code	MIC Values (µg/mL)	Multi Locus Sequence Typing	*bla* Genes	Additional Resistance Genes
		MEM			
pig	CRE 98	2	274	OXA-486, PAO	*aph(3')-IIb, crpP, fosA4, catB7*
pig	CRE 102	**16**	938	OXA-396, PAO	*aph(3')-IIb, fosA4, catB7*
pig	CRE 153	**16**	782	OXA-50, PAO	*aph(3')-IIb, crpP, fosA4, catB7*
pig	CRE 295	2	885	OXA-50, PAO	*aph(3')-IIb, crpP, fosA4, catB7*
human	NEF 23	**16**	938	OXA-396, PAO	*aph(3')-IIb, fosA4, catB7*
human	NEF 156	8	395	OXA-488, PAO	*aph(3')-IIb, crpP, fosA4, catB7*

Species	MIC Values (Lg/mL)			*bla* Genes	*ampC* Genes
	MEM	CAZ	*CTX*		
Enterobacterales					
C. freundii	0.016	2	8	TEM-1	CIT
E. agglomerans	0.032	**128**	**512**	CTX-M-1, TEM-1	
E. coli	4	≤0.5	≤0.5	TEM-1	
E. coli	0.016	0.5	0.5	TEM-1	
E. coli	0.016	**8**	**4**	CTX-M-1, TEM-1	
E. coli	0.016	**32**	**512**	TEM-1, SHV	
E. americana	4	**32**	**16**	CTX-M-1, TEM-1	
Pseudomonas (no breakpoints for CTX)					
P. oryzihabitans	**256**	**256**	32	TEM-1	
Acinetobacter (no breakpoints for CAZ and CTX)					
A. lwoffii	0.016	0.5	8	TEM-1	
Species with no breakpoints					
A. hydrophila	4	32	64	CTX-M-1, TEM-1	
A. hydrophila	4	2	0.5	TEM-1	
B. cepacia	4	8	16	TEM-1	
B. cepacia	8	16	64	CTX-M-1, TEM-1, SHV	
B. cepacia	8	16	64	CTX-M-1, TEM-1	
C. indologenes	16	512	256	TEM-1	
F. odoratum	16	16	64	TEM-1	
S. maltophilia	128	64	256	TEM-1	
S. maltophilia	64	32	256	TEM-1	EBC
S. maltophilia	64	8	64	TEM-1	EBC
S. maltophilia	64	64	256	TEM-1	ACC
S. maltophilia	64	64	64	TEM-1	CIT
S. maltophilia	64	128	128	CTX-M-1, TEM-1	CIT
S. maltophilia	64	128	256	TEM-1	CIT
S. maltophilia	32	16	256	TEM-1	CIT
S. maltophilia	32	64	256	CTX-M-1, TEM-1	CIT
S. maltophilia	32	128	256	CTX-M-1, TEM-1	CIT
S. maltophilia	32	64	256	CTX-M-1, TEM-1	CIT
S. maltophilia	128	64	256	TEM-1	CIT
S. maltophilia	128	4	64	TEM-1	CIT
S. maltophilia	16	16	64	TEM-1	CIT
S. maltophilia	16	128	512	TEM-1	CIT
S. maltophilia	8	64	128	TEM-1	
S. maltophilia	4	2	16	TEM-1	CIT
S. maltophilia	1	2	128	TEM-1	

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Serious Threats

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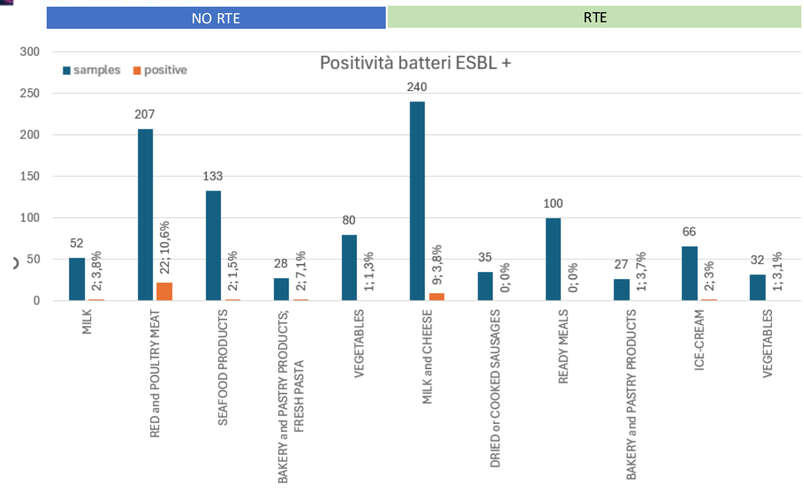
ESBL-PRODUCING
ENTEROBACTERIACEAE



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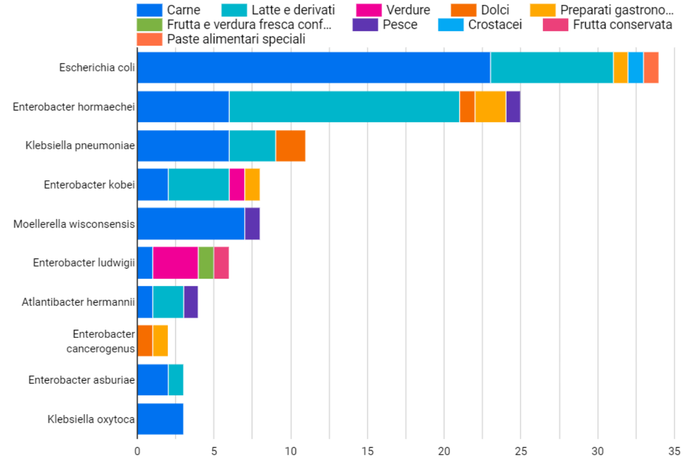
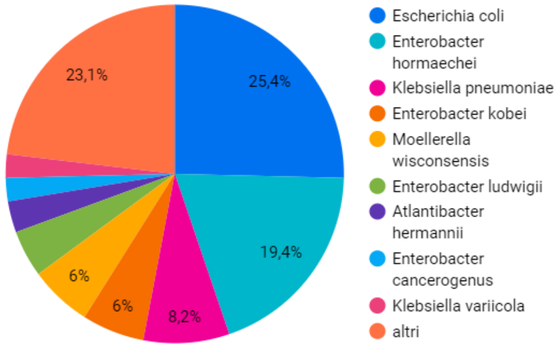
Resistenza antibiotica (geni raggruppati in 27 classi di resistenza) relativa a 134 ceppi ESBL, analizzati attraverso Whole Genome Sequencing.





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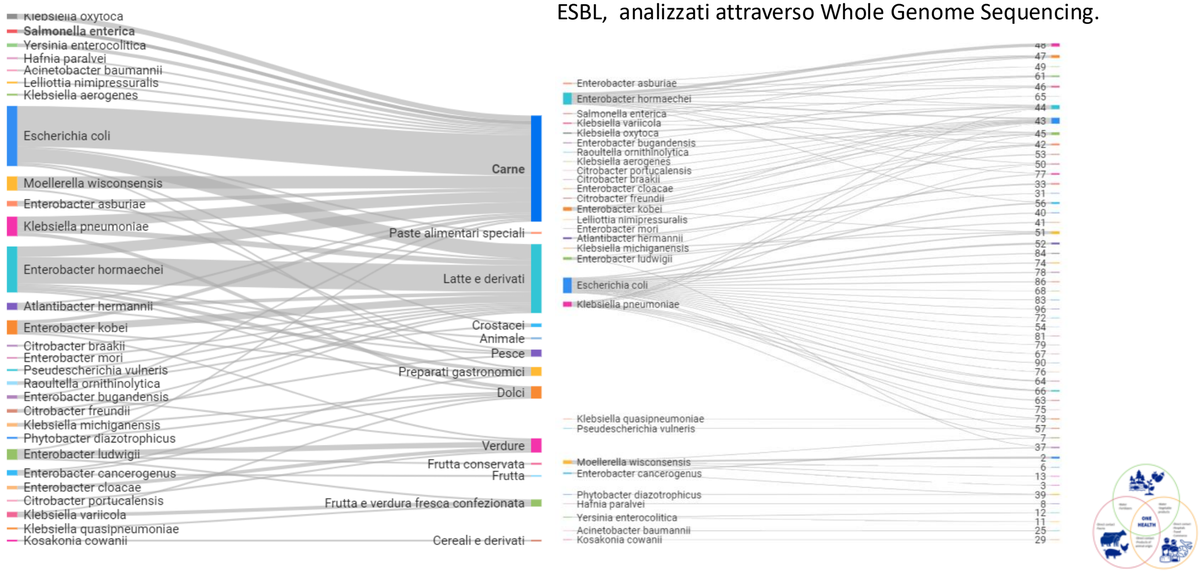
Resistenza antibiotica (geni raggruppati in 27 classi di resistenza) relativa a ESBL, analizzati attraverso Whole Genome Sequencing.



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ACINETOBACTER


CANDIDA AURIS


CLOSTRIDIOIDES DIFFICILE


CARBAPENEM-RESISTANT
ENTEROBACTERIACEAE


DRUG-RESISTANT
NEISSERIA GONORRHOEAE

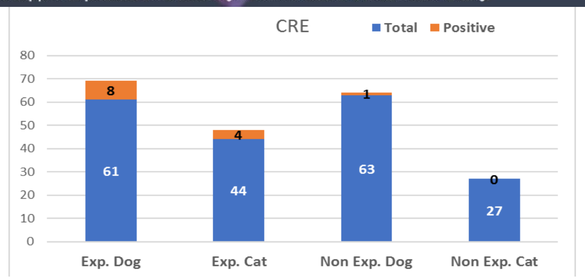
Acinetobacter bacteria can survive a long time on surfaces. Nearly all carbapenem-resistant *Acinetobacter* infections happen in patients who recently received care in a healthcare facility.

frontiers in Microbiology

ORIGINAL RESEARCH
published: xx November 2018
doi: 10.3389/fmicb.2018.02872

Hospitalized Pets as a Source of Carbapenem-Resistance

Fabio Gentilini[1], Maria Elena Turba[2], Frederique Pasquali[3], Noemi Romagnoli[1], Elisa Zambon[4], Daniele Terni[4], Domenico Mion[1], Gisele Peirano[5], Johann Dawid Daniel Pitout[5], Antonio Parisi[6], Vittorio Sambri[7,8] and Renato Giulio Zanoni[1]



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Urgent Threats

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CARBAPENEM-RESISTANT
ACINETOBACTER

Comparative Immunology, Microbiology and Infectious Diseases 70 (2020) 101471

Contents lists available at ScienceDirect

Comparative Immunology, Microbiology and Infectious Diseases

journal homepage: www.elsevier.com/locate/cimid

Detection of a novel clone of *Acinetobacter baumannii* isolated from a dog with otitis externa

Francesca Paola Nocera[a], Luciana Addante[b], Loredana Capozzi[b], Angelica Bianco[b], Filomena Fiorito[a], Luisa De Martino[a,*], Antonio Parisi[b]

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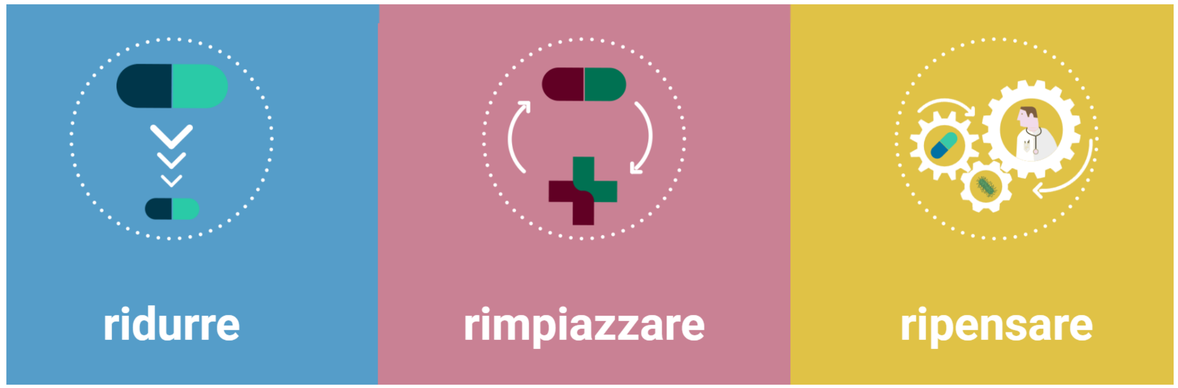

https://www.efsa.europa.eu/en/press/news/170124-0

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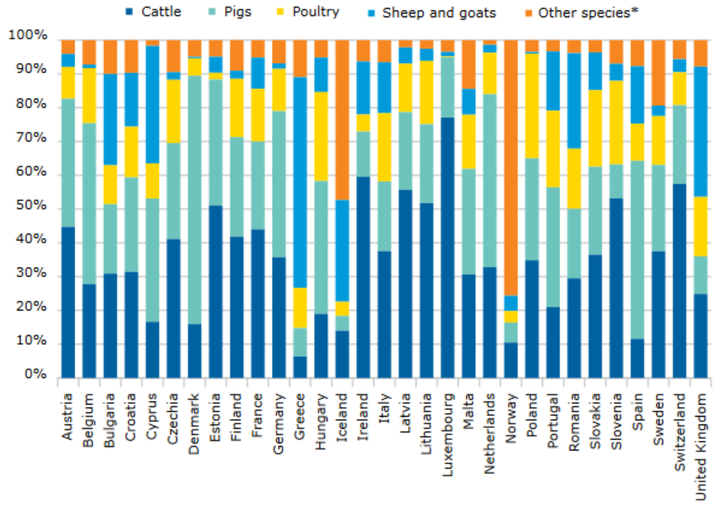
Sales of veterinary antimicrobial agents in 31 European countries in 2019 and 2020

Figure 19. Distribution of the denominator (PCU) in weight by the food-producing animal species, by country, in 2020



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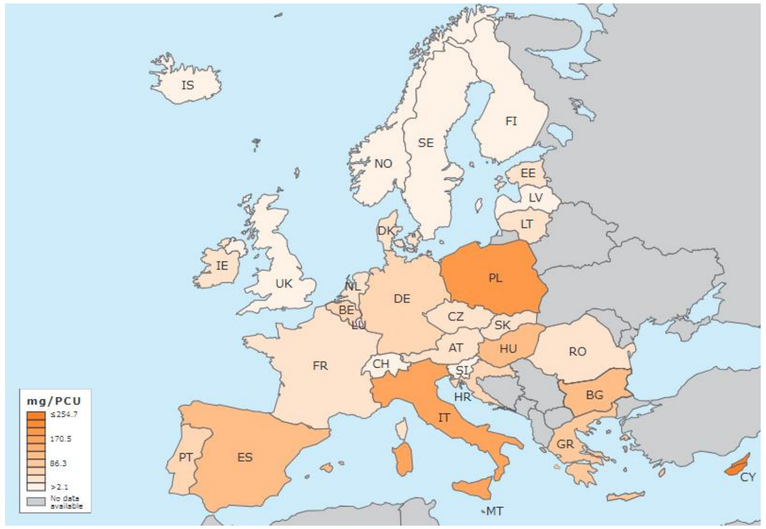
SCIENCE MEDICINES HEALTH

Spatial distribution of overall sales, in mg/PCU, of antibiotic VMPs for food-producing animals in 31 European Countries in 2022



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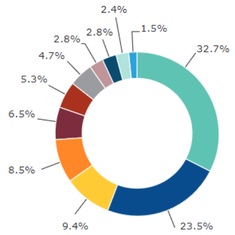
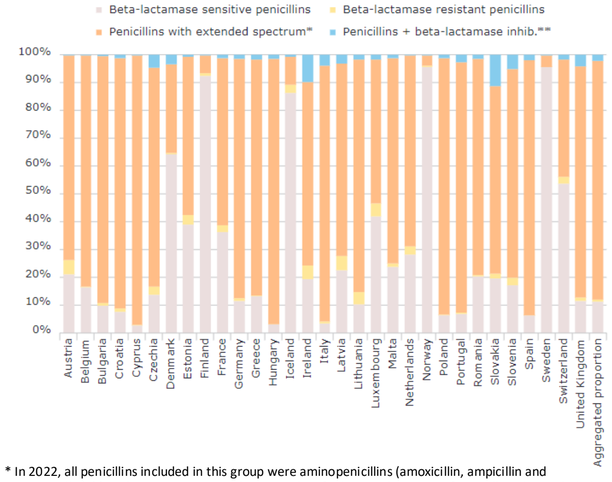
Proportion of aggregated sales, in mg/PCU, of antibiotic VMPs for food-producing animals by antibiotic class in31 European countries in 2022



- Penicillins
- Tetracyclines
- Sulfonamides
- Macrolides
- Aminoglycosides
- Lincosamides
- Other classes*
- Fluoroquinolones
- Polymyxins
- Pleuromutilins
- Trimethoprim



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* In 2022, all penicillins included in this group were aminopenicillins (amoxicillin, ampicillin and metampicillin).** In the ATCvet system, these are classified as combinations of penicillins that include beta-lactamase inhibitors. In 2022, onlycombinations of amoxicillin with enzyme inhibitor were reported

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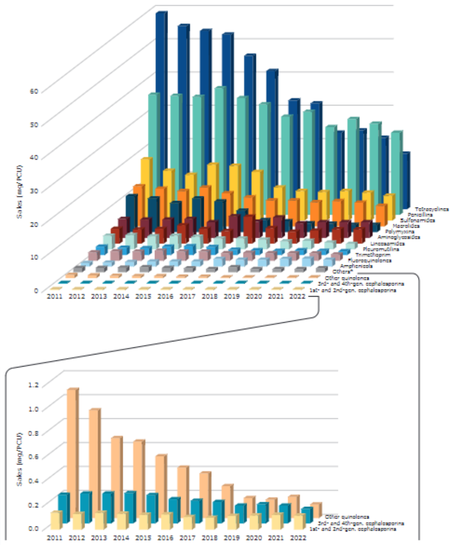
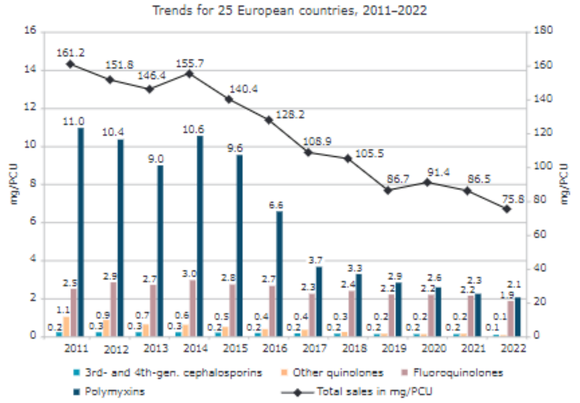
Trends of aggregated sales (mg/PCU) by antibiotic class in 25 European countries from 2011 to 2022





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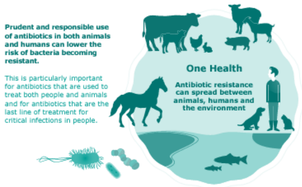
EMA Categorisation of antibiotics for use in animals
for prudent and responsible use

Prudent and responsible use of antibiotics in both animals and humans can lower the risk of bacteria becoming resistant.

This is particularly important for antibiotics that are used to treat both people and animals and for antibiotics that are the last line of treatment for critical infections in people.



The Antimicrobial Advice Ad Hoc Expert Group (AMEG) has categorised antibiotics based on the potential consequences to public health of increased antimicrobial resistance when used in animals and the need for their use in veterinary medicine.

The categorisation is intended as a tool to support decision-making by veterinarians on which antibiotic to use.

Veterinarians are encouraged to check the AMEG categorisation before prescribing any antibiotic for animals in their care. The AMEG categorisation does not replace treatment guidelines, which also need to take account of other factors such as supporting information in the Summary of Product Characteristics for available medicines, constraints around use in food-producing species, regional variations in diseases and antibiotic resistance, and national prescribing policies.

Category A
Avoid
- antibiotics in this category are not authorised as veterinary medicines in the EU
- should not be used in food-producing animals
- may be given to companion animals under exceptional circumstances

Category B
Restrict
- antibiotics in this category are critically important in human medicine and use in animals should be restricted to mitigate the risk to public health
- should be considered only when there are no antibiotics in Categories C or D that could be clinically effective
- use should be based on antimicrobial susceptibility testing, wherever possible

Category C
Caution
- for antibiotics in this category there are alternatives in human medicine
- for some veterinary indications, there are no alternatives belonging to Category D
- should be considered only when there are no antibiotics in Category D that could be clinically effective

Category D
Prudence
- should be used as first line treatments, whenever possible
- as always, should be used prudently, only when medically needed

Categorisation of antibiotic classes for veterinary use
(with examples of substances authorised for human or veterinary use in the EU)

A	**Aminopenicillins** mecillinam pivmecillinam	**Carbapenems** meropenem doripenem	**Drugs used solely to treat tuberculosis or other mycobacterial diseases** isoniazid ethambutol pyrazinamide ethionamide	**Glycopeptides** vancomycin	AVOID
	Ketolides telithromycin	**Lipopeptides** daptomycin		**Glycylcyclines** tigecycline	
	Monobactams aztreonam	**Oxazolidinones** linezolid		**Phosphonic acid derivates** fosfomycin	
	Rifamycins (except rifaximin) rifampicin	**Riminofenazines** clofazimine	**Other cephalosporins and penems (ATC code J01DI), including combinations of 3rd-generation cephalosporins with beta lactamase inhibitors** ceftobiprole ceftaroline ceftolozane-tazobactam faropenem	**Pseudomonic acids** mupirocin	
	Carboxypenicillin and ureidopenicillin, including combinations with beta lactamase inhibitors piperacillin-tazobactam	**Sulfones** dapsone		**Substances newly authorised in human medicine following publication of the AMEG categorisation** to be determined	
		Streptogramins pristinamycin virginiamycin			
B	**Cephalosporins, 3rd- and 4th-generation, with the exception of combinations with β-lactamase inhibitors** cefoperazone ceftiofur cefquinome ceftiofur	**Polymyxins** colistin polymyxin B	**Quinolones: fluoroquinolones and other quinolones** cinoxacin clinofloxacin difloxacin enrofloxacin flumequine ibafloxacin marbofloxacin norfloxacin orbifloxacin oxolinic acid pradofloxacin		RESTRICT
C	**Aminoglycosides (except spectinomycin)** amikacin apramycin dihydrostreptomycin framycetin gentamicin kanamycin neomycin paromomycin streptomycin tobramycin	**Aminopenicillins, in combination with beta lactamase inhibitors** amoxicillin + clavulanic acid ampicillin + sulbactam	**Amphenicols** chloramphenicol florfenicol thiamphenicol	**Macrolides** erythromycin gamithromycin oleandomycin spiramycin tildipirosin tilmicosin tulathromycin tylosin tylvalosin	CAUTION
		Cephalosporins, 1st- and 2nd-generation, and cephamycins cefacetrile cefadroxil cefalexin cefalonium cefalotin cefapirin cefazolin	**Lincosamides** clindamycin lincomycin pirlimycin		
			Pleuromutilins tiamulin valnemulin	**Rifamycins: rifaximin only** rifaximin	
D	**Aminopenicillins, without beta-lactamase inhibitors** amoxicillin ampicillin metampicillin	**Aminoglycosides: spectinomycin only** spectinomycin	**Sulfonamides, dihydrofolate reductase inhibitors and combinations** formosulfathiazole phthalylsulfathiazole sulfacetamide sulfachloropyridazine sulfaclozine sulfadiazine sulfadimethoxine sulfadimidine sulfadoxine sulfafurazole sulfaguanidine sulfalene sulfamerazine sulfamethizole sulfamethoxazole sulfamethoxypyridazine sulfamonomethoxine sulfanilamide sulfapyridine sulfaquinoxaline sulfathiazole trimethoprim	PRUDENCE
	Tetracyclines chlortetracycline doxycycline oxytetracycline tetracycline	**Anti-staphylococcal penicillins (beta-lactamase-resistant penicillins)** cloxacillin dicloxacillin nafcillin oxacillin			
	Natural, narrow-spectrum penicillins (beta lactamase-sensitive penicillins) benzathine benzylpenicillin benzathine phenoxymethylpenicillin benzylpenicillin penethamate hydriodide	phenethicillin phenoxymethylpenicillin procaine benzylpenicillin	**Cyclic polypeptides** bacitracin	**Nitroimidazoles** metronidazole	
			Steroid antibacterials fusidic acid	**Nitrofuran derivatives** furaltadone furazolidone	

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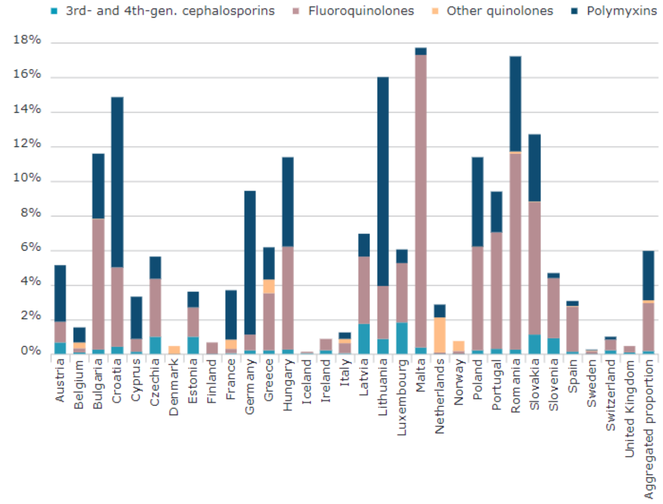
Proportion of sales of 3rd- and 4th-generation cephalosporins, fluoroquinolones, other quinolones and polymyxins of total sales, in mg/PCU, of antibiotic VMPs for food-producing animals in 31 European countries in 2022



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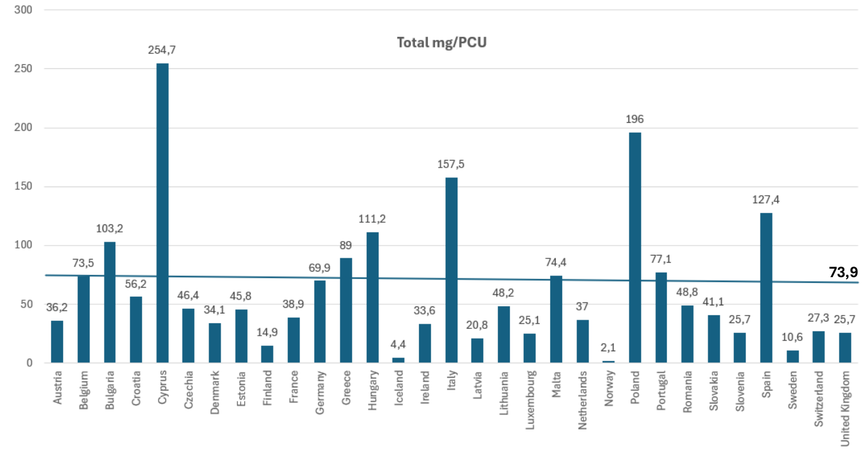
Sales for food-producing species, including horses, in mg/PCU, of the various veterinary antimicrobial classes, by country, for 2022



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ITALY — Sales trends (mg/PCU) of antibiotic VMPs for food-producing animals

Country		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Trends 2010-2022
Italy[7]	Overall sales	421.1	371.0	340.9	301.5	332.3	321.9	294.7	273.7	244.0	191.1	181.8	173.5	157.5	421.1 … 157.5
	3rd- and 4th-gen. cephalosporins	0.35	0.36	0.40	0.38	0.41	0.40	0.38	0.40	0.39	0.19	0.16	0.13	0.09	
	Quinolones (% fluroquinolones)	12.4 (14%)	11.3 (19%)	9.2 (27%)	7.2 (31%)	7.1 (44%)	6.2 (47%)	4.7 (49%)	5.8 (51%)	4.3 (54%)	2.9 (63%)	2.0 (61%)	1.9 (63%)	1.3 (70%)	
	Polymyxins	40.2	30.7	30.1	27.6	29.4	26.1	15.1	5.2	2.7	0.92	0.70	0.65	0.58	

Dal 2010 al 2022:

- 62.6% riduzione del consumo totale annuale (da 421,1 mg/PCU a 157,5 mg/PCU)
- 74,3% riduzione del consumo di cefalosporine di 3ª e 4ª generazione (da 0,35 mg/PCU a 0,09 mg/PCU)
- 97,6% riduzione del consumo di chinoloni (da 12,4 mg/PCU a 1,3 mg/PCU)
- 98,6% riduzione del consumo di polimixine (da 40,2 mg/PCU a 0,58 mg/PCU)

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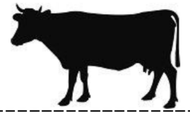
RegioneEmiliaRomagna

LINEE GUIDA
Uso dell'antimicrobico nell'allevamento bovino da latte



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SERVIZIO SANITARIO REGIONALE EMILIA-ROMAGNA

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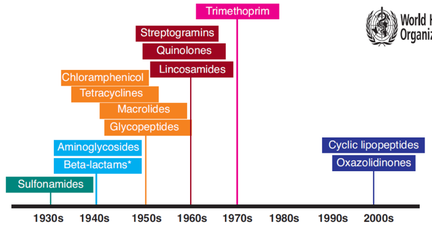
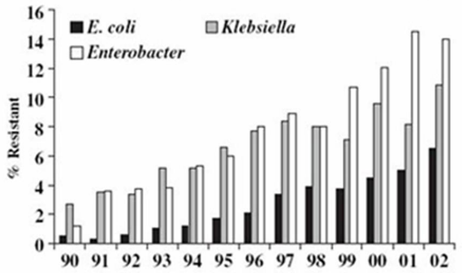
rimpiazzare



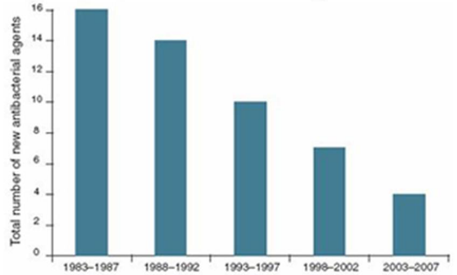
World Health Organization The evolving threat of antimicrobial resistance: options for action.

A. Increase in drug resistance among pathogens



Source: Clinical Microbiol infect 2004; 10 (Suppl. 4): 1–9

B. Decreased number of new drugs in the market



Source: Nat Biotech 2006 24: 1521

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frontiers in Microbiology
REVIEW
published: 26 January 2021
doi: 10.3389/fmicb.2021.609459

Futuristic Non-antibiotic Therapies to Combat Antibiotic Resistance: A Review

Manoj Kumar[1], Devojit Kumar Sarma[1], Swasti Shubham[1], Manoj Kumawat[1], Vinod Verma[2], Praveen Balabaskaran Nina[3], Devraj JP[4], Santosh Kumar[4], Birbal Singh[5] and Rajnarayan R. Tiwari[1]*

antibiotics
MDPI

Review

Artificial Intelligence and Antibiotic Discovery

Liliana David [1], Anca Monica Brata [2,*], Cristina Mogosan [3], Cristina Pop [3], Zoltan Czako [4], Lucian Muresan [5], Abdulrahman Ismaiel [1], Dinu Iuliu Dumitrascu [6], Daniel Corneliu Leucuta [7], Mihaela Fadygas Stanculete [8], Irina Iaru [3] and Stefan Lucian Popa [1]

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CRUSCOTTO FARMACO BIOMASSA AGGREGATO

Data ultimo aggiornamento: 05/08/2024 09:56:29

Username: a.milano_VET

Anno: 2024 | Criticità: TUTTE | Reset Filtri

Regione: Tutte | ASL: Tutte

Specie: BOVINO - LATTE | Ind. Prod.: Tutte

Mediana | Media Pesata

Heatmap Nazionale | Mappa Dettaglio

Tabella (allev selezionati) | Guida

Storico Selezione VS Nazionale

Selezione Nazionale

2 0 2020 2022 2024 Anno

BOVINO - LATTE

2024 - 6 M

Allevamenti Selezionati: 704

Allevamenti Selezionati > 50 capi: 333

Selezione VS Mediana Nazionale

1,71 0,00

DDDAit (%) per Criticità nella Selezione

1,79% 96,76%

criticità C PC NC

Heatmap Mediane Regionali VS Mediana Nazionale

Selezionare il paragone territoriale desiderato

Nazionale | Regionale | ASL

Q1 0.46 | Q2 1,71 | Q3 3.22 | Q4

* Soglie cambio quartile

DDDAit per Classe nella Selezione

Criticità C PC NC

80,23 46,68 39,53 33,02 30,46 27,18 23,57 9,38 7,24 6,62 4,55 3,12 2,51

TETRACICLI AMMINOGLICOS PENICILLINE AMINOPENICILLI CEFALOSPORINE SULFAMIDICI PENICILLINE BLS LINCOSAMIDI RIFAMICINE AMFENICOLI MACROLIDI CEFALOSPORINE FLUOROCHINOL CHINOLONI PLEUROMUTILINE POLIMIXINE

DDDAit per Tipologia di Somministrazione

INJ | IM DC 18,96% | IU 13,21% | IM LC | OR...

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STEWARDSHIP ED APPROPRIATEZZA DIAGNOSTICA

Codice Allevamento: Tutte — RESET FILTRI

Specie: Tutte | Anno: Tutte

Regione: Tutte | ASL: Tutte

Patogeno: Tutte | Patologia: Tutte

Riepilogo Allevamenti selezionati

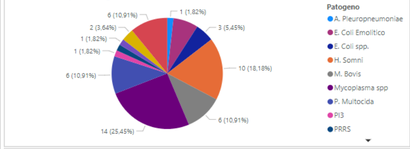
Istituto	Allevamento	Specie	Regione	ASL
IZSLER	020FG011	0122	Puglia	S115
IZSLER	028FG018	0121	Puglia	S115
IZSLER	001BA056	0121	Puglia	S114
IZSLER	021BA058	0122	Puglia	S114
IZSLER	021BA304	0121	Puglia	S114
IZSLER	021BA369	0121	Puglia	S114
IZSLER	021BA426	0121	Puglia	S114
IZSLER	031BA108	0122	Puglia	S114
IZSLER	031BA150	0121	Puglia	S114

Numero conferimenti: 55

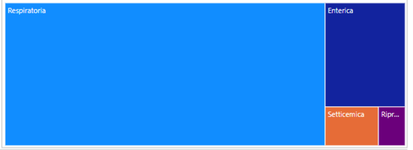
Numero campioni: 185

Generale | Patogeno | Patologia | Sensibilità PA

Conferimenti per Patogeno



Conferimenti per Patologia



Sensibilità Principio Attivo

ID Campione	Amminosidina	AmoxicillinaAcidoClavulanico	Ampicillina	Cefazolina	Fiorfenicolo	Gentamicina	Kanamicina	Spectinomicina	Sulfisoxazolo	Tetraciclina	Tilmulina	Trimetoprim + sulfonamidi	Gamitromicina	Tild
2024-04-23_128369_5_1_PASTEURELLA MULTOCIDA		Q: 2	R		Q: 4		Q: 1	Q: 4		Q: 8	NA	Q: 16	Q: 2	Q: 4
2024-02-02_37847_2_1_PASTEURELLA MULTOCIDA		Q: 4	R		Q: 8		Q: 1	Q: 8		Q: 4	NA	Q: 16	Q: 2	Q: 4
2023-10-25_336627_1_1_PASTEURELLA MULTOCIDA		Q: 1	R		Q: 8		Q: 1	Q: 4		Q: 4	NA	Q: 16	Q: 2	Q: 4

Classificazione Conferimenti

Fonte	N.Conf	Anno	Patogeno	Tipizzazione	Sierotipo	Quantificazione	Allevix	Specie	Materiale	ID Fiscale	N. Campioni	Patologia	Data	Proprietario	Veterinario
IZSLER	58757	2022	H. Somni				001BA056	BOVINO - VACCA	TAMPONE NASALE	07642520725	4	Respiratoria	2022-02-17	Agricola Della Corte Di Spinelli Felice & Angelo Societa' Agricola Semplice	
IZSLER	58757	2022	Mycoplasma spp				001BA056	BOVINO - VACCA	TAMPONE NASALE	07642520725	4	Respiratoria	2022-02-17	Agricola Della Corte Di Spinelli Felice & Angelo Societa'	

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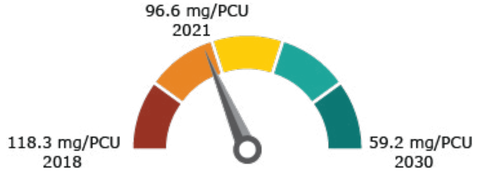
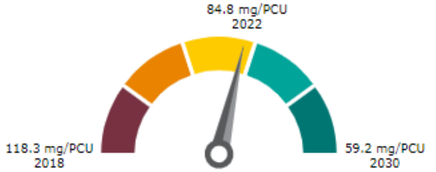
European Commission

Farm to Fork strategy
for a fair, healthy and environmentally-friendly food system





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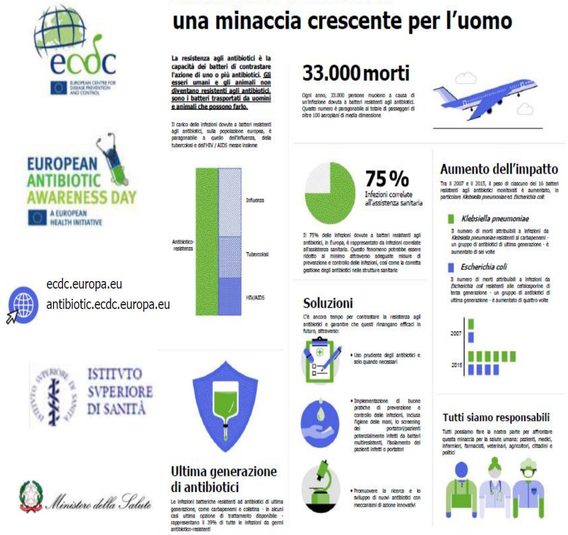

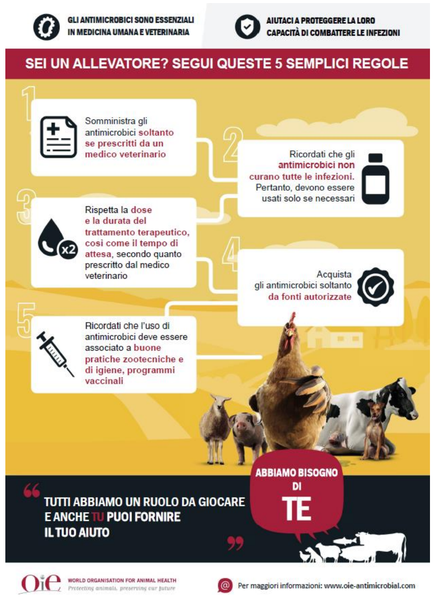

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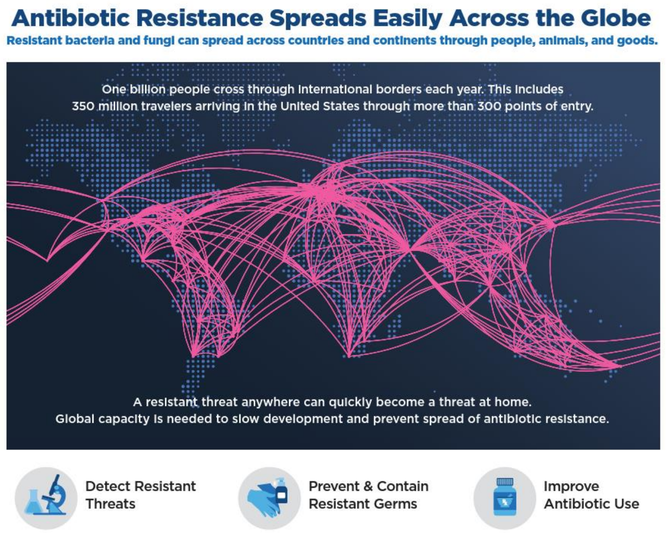

J Law Med Ethics. 2015 Summer;43 Suppl 3:33-7. doi: 10.1111/jlme.12272.

Antibiotic Resistance Is a Tragedy of the Commons That Necessitates Global Cooperation

Aidan Hollis [1], Peter Maybarduk [2]

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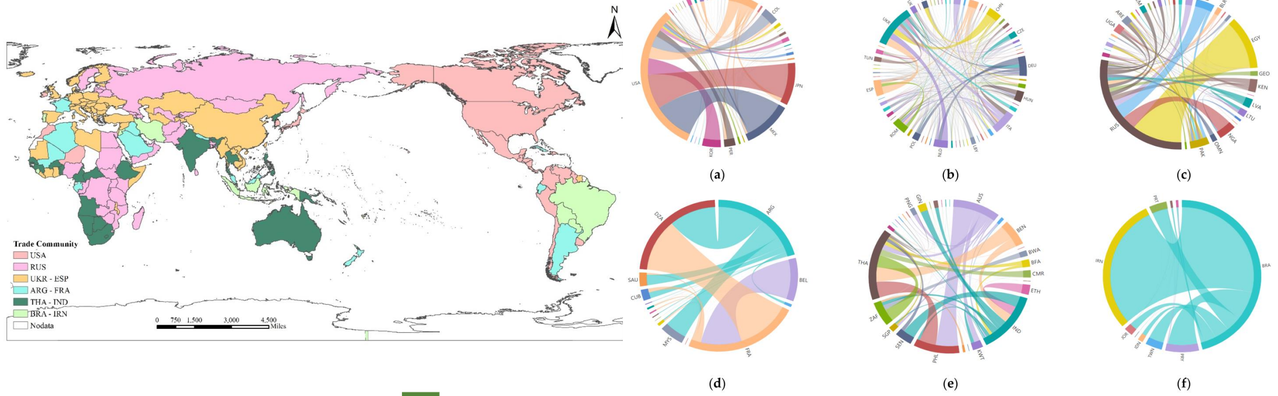

foods
MDPI

Article

Evolution of Global Food Trade Patterns and Its Implications for Food Security Based on Complex Network Analysis

Jieyong Wang [1,2,*] and Chun Dai [1,2,3]

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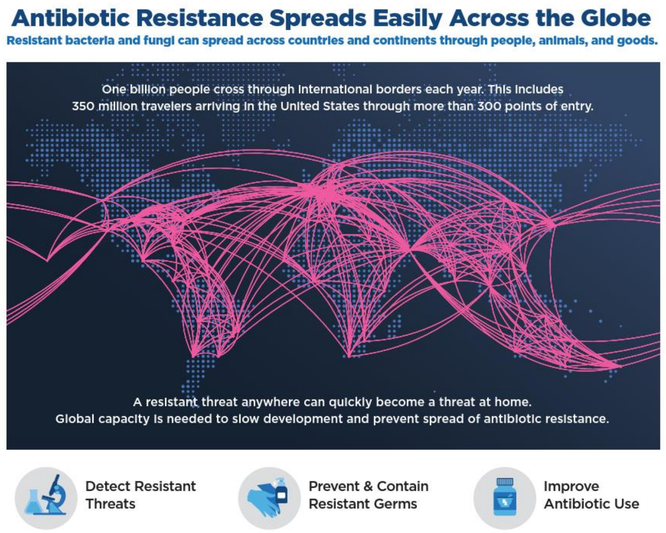
istituto zooprofilattico sperimentale
della puglia e della basilicata



J Law Med Ethics. 2015 Summer;43 Suppl 3:33-7. doi: 10.1111/jlme.12272.

Antibiotic Resistance Is a Tragedy of the Commons That Necessitates Global Cooperation

Aidan Hollis [1], Peter Maybarduk [2]

Grazie per la cortese attenzione