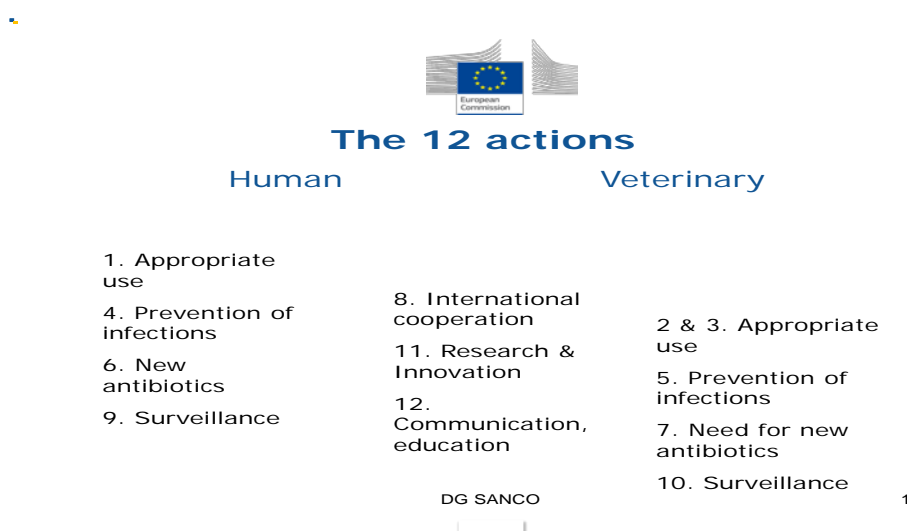


## **AMR – a veterinary perspective on the ‘one health’ issue**

Antimicrobial resistance has become a global public health concern that represents a significant threat to human health. With regard to animal health and welfare, antibiotic resistance is a challenge and a potential threat but does not currently impact on disease treatment options for veterinary medicine in Ireland. Antimicrobial resistance is a multi-factorial phenomenon that crosses the human health, animal health and environmental domain with antimicrobials being essential tools in maintaining animal health and welfare.

The publication European Commission’s Action plan (2011) – [www.ec.europa.eu/health/antimicrobial\\_resistance](http://www.ec.europa.eu/health/antimicrobial_resistance) – outlines 12 steps to tackle antimicrobial resistance in a holistic multi-sectoral approach involving many different sectors with a strong focus on the ‘one health’ approach.



The actions common to both the human and veterinary sectors focus on the responsible use of antimicrobials, disease prevention and control, the surveillance of antimicrobial consumption as well as AMR development and spread.

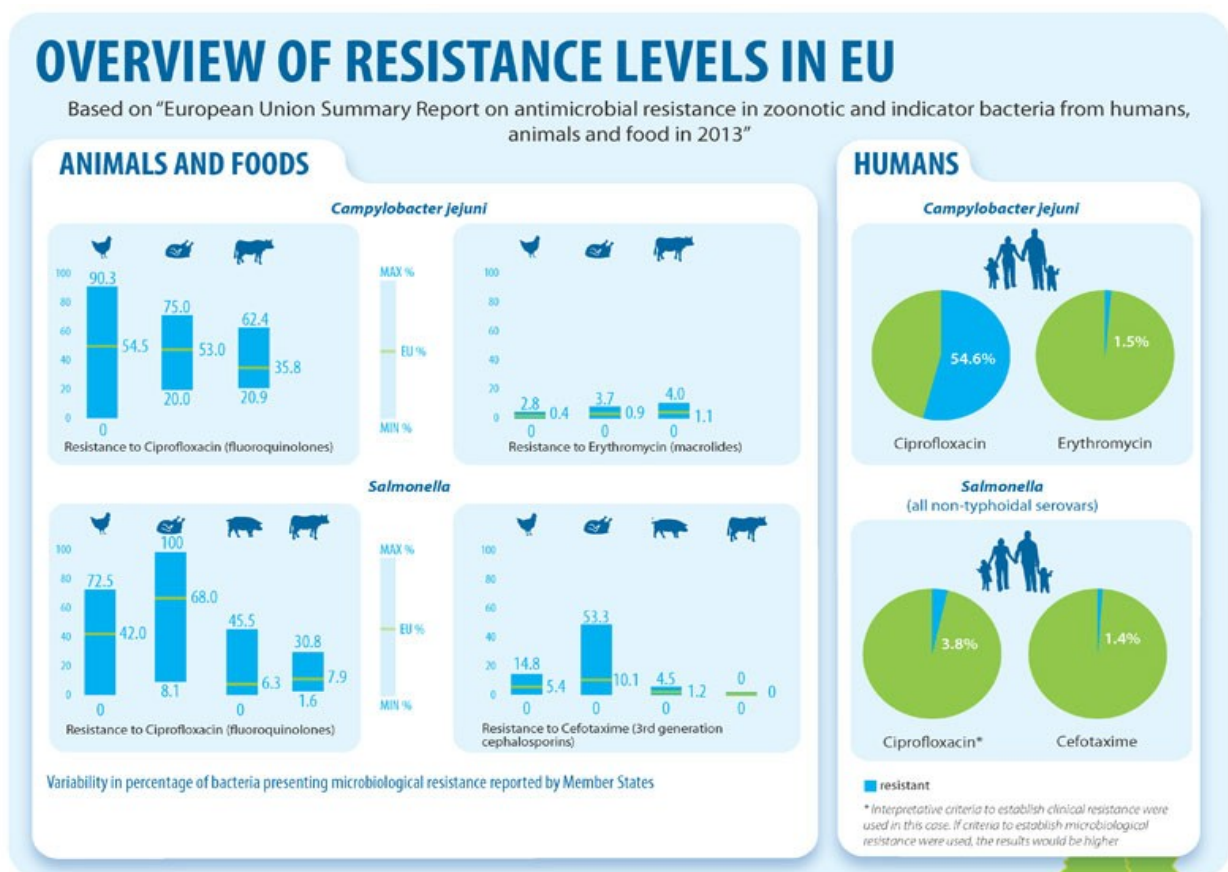
In veterinary medicine, antibiotics can only be prescribed by a veterinary practitioner for animals under their care and there are strict legislative requirements overseeing the supply and usage of veterinary medicines. The principle of prudent use continues to be promoted at the prescriber and user level both at national and European level, with stakeholders such as Veterinary Ireland publishing a policy document on AMR and Prudent using guidelines developed by the European Commission. Newly drafted veterinary medicines legislation currently under discussion at EU level places a strong emphasis on the responsible use of certain classes of antibiotics that have been classified by the World Health Organisation (WHO) and the World Organisation for Animal Health (OIE) as Critically Important Antibiotics (CIAs) both in veterinary and human sectors

A focus on disease prevention rather than control or cure has been further strengthened through new legislation in the form of the Animal Health Law which is part of a package of measures to strengthen the enforcement of health and safety standards for the whole agri-food chain. Indeed,

industry lead and government supported organisations, such as Animal Health Ireland, aim to maintain and improve standards of animal health through the various disease eradication and control programmes currently underway, with the emphasis on improved bio-security practices to reduce disease occurrence.

Research in relation to the use of alternative disease therapies, as well as improved farm management practices are all being developed in the context of improving animal health and welfare in a sustainable way.

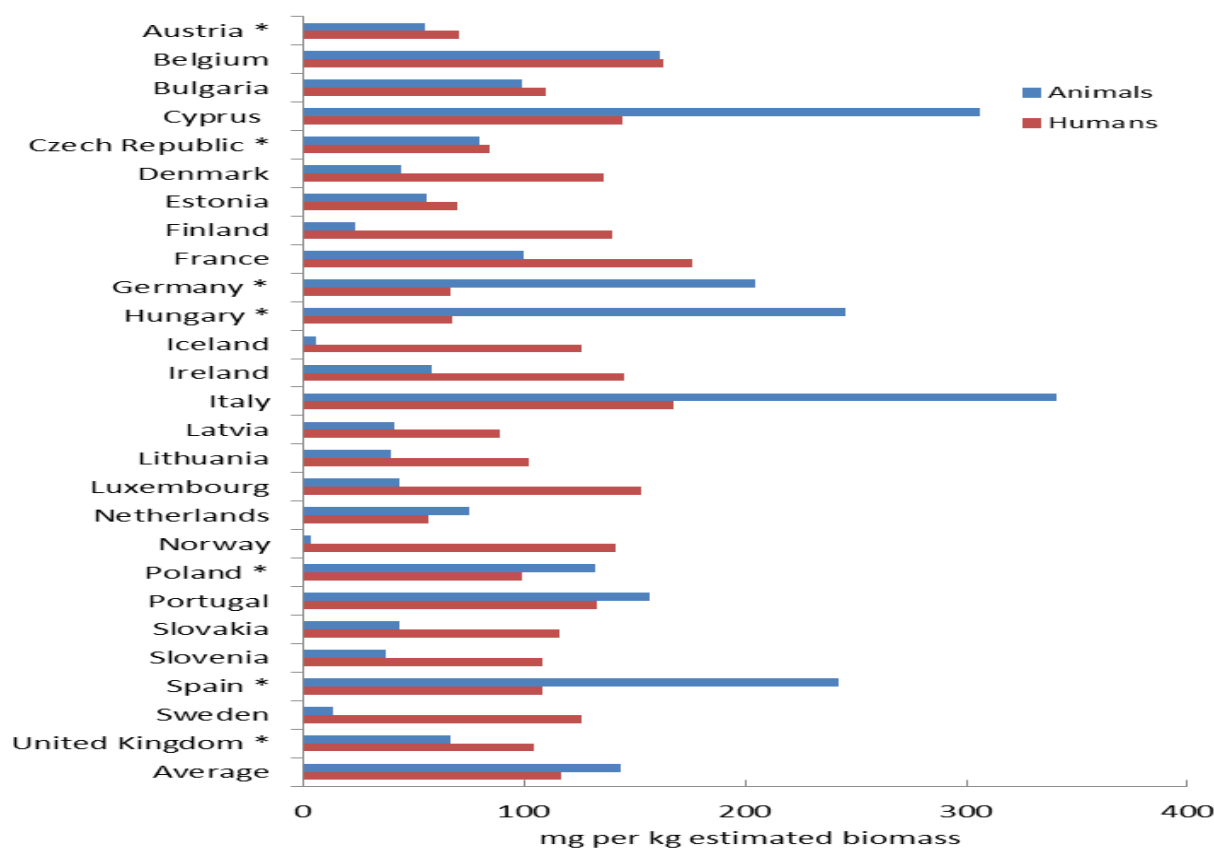
Surveillance of AMR is a prerequisite for understanding the development and dissemination of AMR and provides data for risk assessments and for planning targeted interventions aimed at the containment of AMR. The national reference laboratory at the Department of Agriculture, Food and Marine has been collating data on AMR monitoring since 2008, with mandatory EU monitoring and reporting of AMR in zoonotic and commensal bacteria being required annually. The monitoring being carried out in 2015 focuses on the pig sector and relates to *Salmonella* spp. and *E. coli* in both the live and dead animals with an additional requirement to examine the incidence of enzyme (ESBL/AmpC) producing *E. coli* in beef and pig meat at retail level.



The most recent report on resistance levels in zoonotic bacteria throughout the EU – [www.efsa.europa.eu/en/efsajournal/pub/3991.htm](http://www.efsa.europa.eu/en/efsajournal/pub/3991.htm) – shows a marked variation between member states, but campylobacteriosis was the most commonly reported zoonoses, with most member states including Ireland meeting their salmonella reduction targets for poultry. Resistance trends on the basis of Irish data collected and analysed from 2010-2014 show levels staying stable in the range of 15-19% with very little variation.

With regard to sales of antibiotics for use in animals, the European Medicines Agency has been collecting sales data annually as part of the European Surveillance of Veterinary Antimicrobial Consumption (ESVAC) project – [www.ema.europa.eu/ema/index.jsp?curl=pages/regulation](http://www.ema.europa.eu/ema/index.jsp?curl=pages/regulation) – which is a co-operation between the national authorities throughout the European Union and is co-ordinated by the EMA. Results show that sales of antibiotics for use in animals fell overall by 15% between 2010 and 2012 in Europe. This type of information is essential to identifying risk factors that could lead to the development and spread of resistance in animals.

In 2015, the European Centre for Disease Control (ECDC), the European Food Safety Authority (EFSA) and the European Medicines Agency (EMA) published jointly for the first time a report – [www.efsa.europa.eu/en/efsajournal/pub/4006.htm](http://www.efsa.europa.eu/en/efsajournal/pub/4006.htm) – exploring associations between the consumption of antimicrobials in humans and food-producing animals, and antimicrobial resistance in bacteria from humans and food-producing animals, using 2011 and 2012 data currently available from their relevant five EU monitoring networks. The report showed that usage in animals was significantly lower than in humans in Ireland, although this was not the case in all member states, as shown in the graph below using 2012 human and animal consumption data, taken from the Joint Interagency Antimicrobial Consumption and Resistance Analysis (JIACRA) Report.



The JIACRA report also showed that the highest selling classes of antimicrobials in human medicine were penicillins, macrolides and flouroquinolones, whereas in animals, tetracyclines, sulphonamides

and penicillins were the classes most sold. The report also showed that consumption of antibiotics critically important for human medicine (such as flouroquinolones and 3<sup>rd</sup> – 4<sup>th</sup> generation cephalosporins) was higher in humans. The JIACRA finding in relation to CIAs is in line with the data on animal consumption collected by the Health Products Regulatory Authority, which shows sales of veterinary antibiotics containing flouroquinolones and cephalosporins at less than 2% in 2013.

The JIACRA report stated that there was no association between the consumption of 3<sup>rd</sup> and 4<sup>th</sup> generation cephalosporins in food producing animals and the occurrence of resistance to this subclass in selected bacteria from humans. There were some positive associations referred to for the consumption of flouroquinolones in food producing animals and the occurrence of resistance in *E. coli* from humans, and the consumption of macrolides in food-producing animals and the occurrence of resistance in *Campylobacter* spp. from human cases of infection. The report findings do come with certain caveats and suggest interpreting findings with caution. However, there is a definitive conclusion that responsible use of antibiotics in both humans and animals should be promoted. In 2014, the European Medicines Agency published recommendations to limit the development of AMR linked to the use of antibiotics in animals, thereby minimising at source the risk of transmission of resistance from animals to humans, again with the particular focus on responsible use.

Raising awareness of the AMR issue among the key stakeholders in the agri-food sector continues to be a priority, and requires engagement at the various levels. The education of the prescribers and people administering antibiotics continues to be necessary in order to continue to change behaviour. Officials from DAFM carry out veterinary practice and farm inspections to examine prescribing practices, and the supply and usage of antibiotics. There is also a dedicated Investigative Division in DAFM that carries out in depth investigations with a view to prosecution if there are on-going issues in relation to enforcement of the Medicines legislation.

A joint Department of Agriculture, Food and Marine and Department of Health initiative has led to the establishment of the National Interdepartmental AMR Consultative Committee with membership from across the health, agri-food and environmental sectors. The establishment of this committee further underlines that tackling the rise of AMR is a priority for both departments.

It is clear that everyone has a role to play in addressing the societal issue of AMR, but from an agricultural perspective and given the dependence of the Irish agri-food sector on the export market and global trade, this Department will continue to provide leadership and promote a collaborative response from all key players to address this global societal challenge.

*Dr Caroline Garvan*