University of Tokyo and WOAH Public Symposium
-Information collection on veterinary medicines on farms - Towards the construction of an electronic prescribing system.
(17 Oct 2023, Koshiba Hall, University of Tokyo, online)
Abstracts.

Presentation 1

Objectives and outcomes of JRA projects

Takeshi Haga (University of Tokyo)

Abstract (provisional translation)

Veterinary medicinal products play an important role in protecting animal health and in the production of safe livestock and fisheries products. On the other hand, it has been pointed out that the use of veterinary antimicrobials may lead to the development of drug-resistant bacteria, which may reduce the therapeutic effect of antimicrobials on animals, and that they may be transmitted to humans via livestock products, etc., thereby preventing the therapeutic effect of antimicrobials in humans from being fully achieved.

In the EU and other countries, a monitoring system for the use of veterinary antimicrobials in livestock is being developed, which is being used to promote the appropriate use of antimicrobials. In Japan, the Ministry of Agriculture, Forestry and Fisheries (MAFF) publishes the 'Annual Report on Sales of Veterinary Medicinal Products' and, in particular, the estimated sales volume of antimicrobials, anthelmintics and antiprotozoa by manufacturers and distributors for each animal used, but there is no monitoring of the usage volume of veterinary medicinal products on farms.

Under these circumstances, we have developed a system that can monitor the use of veterinary antimicrobials, vaccines, hormones, etc. designated as medicines requiring special instructions on farms (see below) through the Japan Racing Association (JRA) Livestock Production Promotion Project "Demonstration and Testing Project for Swine Herd Hygiene Management Using Electronic Instructions" from 2020 to 2014, aiming to contribute to improved animal husbandry and hygiene management on farms. The system (e-shijisho) was developed to monitor the use of antimicrobials, vaccines, hormones, etc. designated as medicines requiring special instructions on farms, and demonstration tests of e-shijisho were conducted in pigs. In 2023-6, through its successor JRA project, the 'Project to Collect and Reduce Information on Veterinary Medicinal Products on Farms', the scope for ascertaining the use of veterinary medicines was expanded to include veterinary medication without written instructions, and a study of methods to ascertain the use of such medicines in cattle and poultry was also initiated.

Today, the objectives and results of these two JRA projects are presented.

Presentation2

Status of antimicrobial use in the global animal sector and WOAH's initiatives

Nahoko Ieda (WOAH)

Abstract

The World Oranisation for Animal Health (WOAH), founded in Paris in 1924 as the Office International des Epizooties (OIE), is an intergovernmental organisation with 183 member states worldwide as of 2023. One of the key roles of the WOAH is to revise the International Standard on Animal Health and Welfare - Terrestrial and Aquatic Animal Health Regulations Codes & Manuals. The Codes & Manuals have since been updated and supplemented with additional chapters relating to AMR. over and over again to the present day. In addition, WOAH published the Strategy on AMR and Prudent Use of Antimicrobials in 2016, promoting the 'responsible and prudent use' of antimicrobials to veterinarians and livestock administrations worldwide. Responsible Use" to veterinarians and livestock administrations worldwide. At the same time, data on antimicrobial use in animals (Antimicrobial Use, AMU) was started to be collected from Member States. The collected data are stored in a global database and analysed annually by region (Africa, Americas, Asia Pacific, Middle East, Europe, etc.) by WOAH headquarters and published in an annual report. This symposium will present a selection of data from the latest annual reports. In addition, the AMU data collection system by WOAH as well as national data collection systems of each country will be presented.

Presentation 3

Japan’s initiatives to electric prescription system

-Towards countermeasures against AMR-

Takahiro Shirakawa (MAFF)

Abstract

Since the Action Plan to Combat Drug Resistance (AMR) was formulated in Japan in 2016, the country has been promoting measures to combat drug resistance in the animal sector, in collaboration with the medical and environmental sectors, under the concept of the One Health Approach. Efforts have focused on the promotion of appropriate and prudent use. For example, risk assessments have been carried out for individual preparations to ensure that drug-resistant bacteria do not adversely affect human health via foodstuffs, and risk management measures have been implemented based on these assessments; a guidebook on antimicrobial treatment has been prepared; videos of good practices in the swine sector have been distributed; and public awareness has been raised through the use of social networking services. As a result of these efforts, only the tetracycline resistance rate could not be achieved out of the three indicators (tetracycline resistance rate, third-generation cephalosporin resistance rate and fluoroquinolone resistance rate in E. coli from healthy

livestock and poultry), which were set as outcome indicators.

On 7 April 2023, the Action Plan for AMR control was revised, specifying items to be strengthened based on previous efforts and new items to be addressed. The items to be strengthened include: 'Enhancement of surveys on drug resistance trends', 'Development of vaccines and other alternatives to antimicrobial agents', 'Appropriate implementation of risk management measures based on risk assessment results', 'Thorough guidance to relevant personnel and enhancement of the content of dissemination and awareness-raising tools' and 'Research and studies for the development of rapid diagnostic techniques'. Meanwhile, as a new item, the JRA set out 'Establishment of a system to monitor the use of veterinary antimicrobials in the livestock sector on a farm-by-farm basis'. In this regard, demonstration trials have been carried out mainly by the University of Tokyo under the JRA project, and we are working on the establishment of a system with reference to these results. Ultimately, we hope to be able to utilise farm-specific medication data to cut the cost of unnecessary medication and enable veterinarians to review medication based on past data.

Presenrtation4

Veterinary antimicrobial use in Europe and the US

Katsuaki Sugiura (University of Tokyo)

Abstract

1 Introduction.

In modern livestock production, antimicrobials are used for growth promotion, prevention and treatment of infectious diseases and have become essential production materials. However, there is concern that the use of antimicrobials may select for drug-resistant bacteria, which not only makes treatment of livestock more difficult, but may also spread to humans via livestock products and the environment, rendering antimicrobials ineffective in treating patients with infectious diseases. It is estimated that if no further action is taken (if the resistance rate increases at the current rate), the number of deaths from drug-resistant bacteria will exceed 10 million worldwide by 2050, more than the number of deaths from cancer1).

In order to reduce the selection pressure for resistant bacteria and reduce the increase in the number of resistant bacteria, appropriate and prudent use of antimicrobials is required, and action plans have been drawn up and various measures taken in various countries. Monitoring of antimicrobial use is underway in many countries to verify that these measures are reducing the use of antimicrobials.

2 Current antimicrobial use

Antimicrobials are mainly used in medicine and livestock production, and partly as pesticides. In livestock production, antimicrobials are used as veterinary medicines to prevent

and treat infectious diseases and as feed additives to promote growth. According to the Annual Report on Drug Resistant One-Health Trends 2022 (24 January 2023, Drug Resistant One-Health Trends Investigation Study Group), the amount used in Japan in 2020 was 626.8 and 234.8 tonnes in terms of active ingredient weight respectively, despite the notification of proper and prudent use, Despite notices on proper and prudent use, there has been no decrease over the past few years.

There are various types of antimicrobial agents with different mechanisms of action, so it is important to use them differently. As shown in Figure 1, there is some degree of differentiation between antimicrobials used in the medical and livestock sectors, but penicillins, tetracyclines and aminoglycosides are used in both medicine and veterinary medicine.

Global use in the livestock sector is estimated by Tiseo et al. of ETH Zurich to have been around 93,309 tonnes (weight of active ingredient) in 2017, with China accounting for 45% of global use and projected to remain the largest consumer (43%) in 2030. 2017 antimicrobial use The top ten countries in terms of antimicrobial use in 2017 were China, Brazil, the USA, Thailand, India, Iran, Spain, Russia, Mexico and Argentina, which together accounted for 75% of global antimicrobial use in livestock production, with the combined use of the top ten countries accounting for 72% of global antimicrobial use in livestock production in 2030 and total use in the livestock sector in 2030 is expected to reach 104,079 tonnes2).

The use of veterinary antimicrobials in the EU varies from country to country, with the highest use in Spain (approximately 1,007 tonnes per year), followed by Poland (841 tonnes), Italy (731 tonnes) and Germany (655 tonnes).3 In order to enable comparisons between Member States, the EU has established the European Veterinary Antimicrobial Surveillance (ESVAC), it publishes annually the amount used by each Member State in mg of active ingredient by weight per kg of livestock biomass (PCU)3). Cyprus has the highest use at 400 mg/kg, followed by Italy (191 mg/kg), Hungary (190 mg/kg) and Poland (185 mg/kg), but the majority of countries use less than 100 mg/kg. Incidentally, a similar method of calculation for Japan yields 197 mg/kg, slightly higher than Hungary, Italy and Poland (all in 2019) (Figure 2).

Large quantities of antimicrobials are used in the livestock sector in the USA, where until recently antimicrobials could be purchased without a prescription: in 2020 approximately 6002 tonnes of antimicrobials and 4447 tonnes of anticoccidials and other drugs were used[3)].

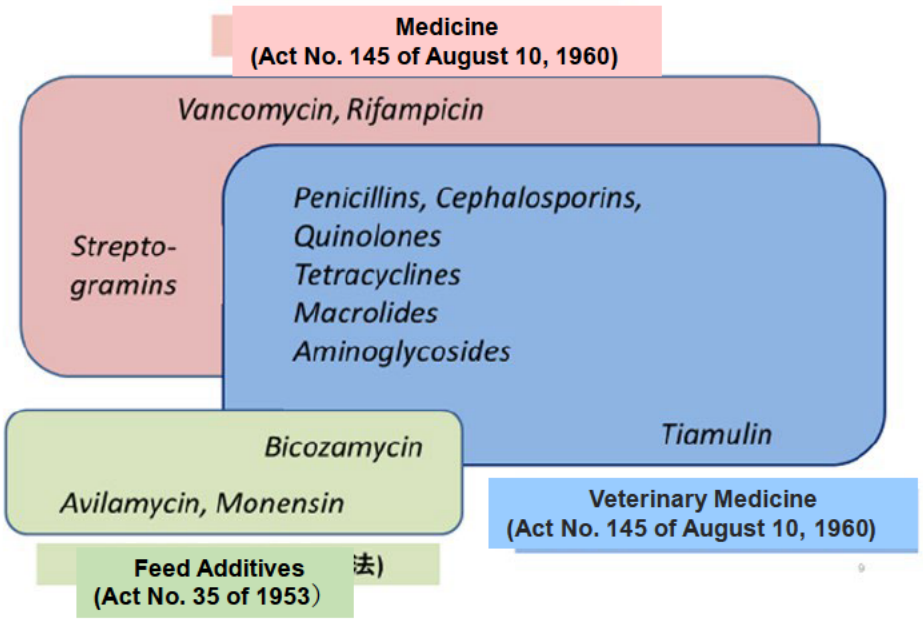

Fig. 1 Antimicrobial agents used in various sectors

3 Efforts to reduce use

In Japan, an Action Plan for Drug Resistance was decided in April 2016, which includes specific initiatives in each of six areas: 1) awareness-raising and education, 2) trend surveys and surveillance, 3) infection prevention and control, 4) appropriate use of antimicrobial agents, 5) research and development and drug discovery, and 6) international cooperation.

Action plans have also been published in EU countries. Measures to reduce the use of antimicrobials that have attracted attention include (i) benchmarking of farmers, (ii) strengthening the role of veterinarians and (iii) eliminating economic incentives for antimicrobial use. (i) Some EU Member States (e.g. the Netherlands, Denmark and Germany) have monitored use at farmer level and issued warnings to farmers with high use and required them to submit hygiene management plans with specific reduction measures, which have helped to reduce use5, 6). Measures to strengthen veterinary involvement include (i) prohibiting farmers from contracting more than one veterinarian (Belgium)7), requiring regular visits by veterinarians (the Netherlands), requiring consultancy contracts with veterinarians (Denmark), (ii) applying higher tax rates on antimicrobials to remove economic incentives to use antimicrobials (Denmark, Belgium and Germany), prohibiting discount sales and rebates (France)8) and separating the prescription and sale of veterinary medicines (Denmark).

In the USA and Canada, veterinary monitoring of antimicrobial use has been strengthened

through the introduction of a prescription requirement for veterinary antimicrobials and the strengthening of the veterinary-client-affected animal relationship (VCPR) in prescribing.

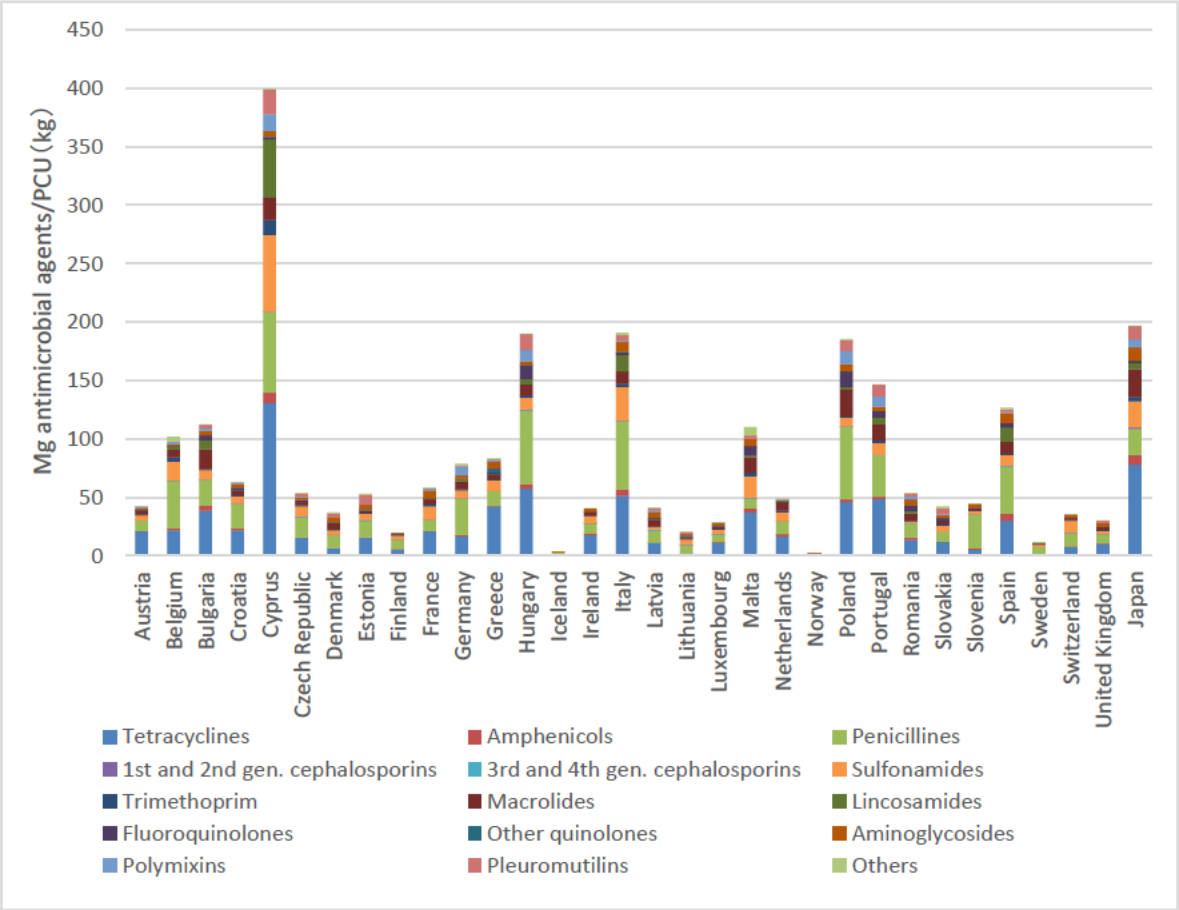

Fig. 2 Veterinary antimicrobial use in 30 EU Member States (2019).

Unit: mg active ingredient weight per kg livestock biomass; source: European Surveillance of Veterinary Antimicrobial Agent Use (ESVAC) Report 2021; for Japan, the speaker used the same method as ESVAC (however, goats are not included in the livestock biomass calculation).

4 Sustainable livestock production and antimicrobial use

Modern livestock production, especially corporate livestock production, seeks to maximise production at minimum cost and maximise profits. To this end, genetically improved livestock are fed compound diets under optimised feeding techniques and assisted by drugs to maximise their biological potential. However, this pursuit of profitability has led to various problems, including loss of biodiversity, sacrifice of animal welfare and increased environmental impact. Turning to antimicrobials, they are widely used in modern livestock production to promote growth and are increasingly relied upon to prevent infectious diseases. The trend towards close stocking to make efficient use of land resources has resulted in the

sacrifice of animal welfare and stress on livestock, as well as the fear that infectious diseases can spread easily and cause extensive damage once they have entered the environment. Reliance on antimicrobials can be reduced by reducing close stocking, improving animal welfare standards, reducing stress, reducing environmental impact and keeping livestock in an environment less prone to infections, i.e. by aiming for sustainable livestock farming.

The benchmarking of antimicrobial use by farmers in the Netherlands, Germany and elsewhere was established by expanding and using farmer databases that had already been established in quality assurance systems (IKB, QS, etc.) aimed at sustainability, including improving animal welfare and reducing environmental impact.

Finally.

The reduction of antimicrobial use in Europe is considered to have been successful as a result of various initiatives in reaction to over-intensive livestock farming and a move back to sustainable livestock farming. In Japan, it is considered possible to reduce antimicrobial use even more effectively by incorporating the appropriate and prudent use of antimicrobials and recording the amounts of antimicrobials used as a control point in management standards such as livestock GAP.

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Presentation5

Electronic prescription system in Italy

Giovanbattista Guadagnini (Swine practitioner, vet Evolution, Italy, Vice-President UEVP (Union of European Veterinary Practitioner)

Abstract

In the presentation I will try to explain how drugs are managed in Italy with REV system, the Italian electronic system for veterinary prescription. After an introduction on pig population in Italy and how it is particular our Italian production, I will try to explain why Italy set up the electronic prescription project based on evidence of high antibiotic consumption in Italy.

This situation pushed Italy to build this electronic system before only for prescription and after 2 years also for registering electronic treatment.

This system that I will try to show to people participating to the symposium can be run with the computer with several possibilities but also with an app that runs on both google and IOS systems, so anybody is excluded.

Easily with the app the vets can work with a phone, or a tablet connected to the net but most of the functions are available also offline.

The prescription is easily done in few minutes, and you can send it to the farmer or to the pharmacist that will sell you the products.

My intention is after explaining to show live how it works because it's really easier surfing into the system than explaining how it works.

At the end of my presentation, I will show how drug consumption data are declining from ESVAC data from 2021, then I will show you some data derived my clients where my practice is active in the managing of the farm, with the aim to show you how the Classyfarm system connected to REV calculate the antibiotic consumption.

With Classyfarm I will show different farms and different situation and briefly I will try to explain how much work is behind these results.

Panel discussion

Topic: utilisation of electronic prescribing system data

Panellists:

- Giovanbattista Guadagnini（Swine practitioner, vet Evolution, Italy, Vice-President UEVP (Union of European Veterinary Practitioner)
- Takahiro Shirakawa (MAFF)
- Katsuaki Sugiura (University of Tokyo)
- Mitsuo Kagawa (Kagawa Livestock Clinic/Pig farm Consultancy)

Moderator:

- Tomoko Ishibashi (University of Tokyo)