CHAPTER 6.8.

MONITORING OF THE QUANTITIES OF ANTIMICROBIALS USED IN ANIMAL HUSBANDRY

Article 6.8.1.

Purpose

The purpose of these recommendations is to describe an approach to the monitoring of quantities of antimicrobials used in animal husbandry.

These recommendations are intended for use by OIE Members to collect objective and quantitative information to evaluate usage patterns by animal species, antimicrobial class, potency and type of use in order to evaluate antimicrobial exposure.

Article 6.8.2.

Objectives

The information provided in these recommendations is essential for *risk analyses* and planning, can be helpful in interpreting resistance surveillance data and can assist in the ability to respond to problems of antimicrobial resistance in a precise and targeted way. This information may also assist in evaluating the effectiveness of efforts to ensure prudent use and mitigation strategies (for example, by identifying changes in prescribing practices for *veterinarians*) and to indicate where alteration of antimicrobial prescribing practices might be appropriate, or if changes in prescription practice have altered the pattern of antimicrobial use.

The continued collection of this basic information will also help give an indication of trends in the use of animal antimicrobials over time and the role of these trends in the development of antimicrobial resistance in *animals*.

For all OIE Members, the minimum basic information collected should be the annual weight in kilograms of the active ingredient of the antimicrobial(s) used in food animal production. In addition, the type of use (therapeutic or growth promotion) and route of administration (parenteral or oral administration) should be recorded.

Members may wish to consider, for reasons of cost and administrative efficiency, collecting medical, food *animal*, agricultural and other antimicrobial use data in a single programme. A consolidated programme would also facilitate comparisons of animal use with human use data for relative *risk analysis* and help to promote optimal usage of antimicrobials.

Article 6.8.3.

Development and standardisation of monitoring systems

Systems to monitor antimicrobial usage consist of the following elements:

1. Sources of antimicrobial data

   a) Basic sources

      Sources of data will vary from country to country. Such sources may include customs, import and export data, manufacturing and manufacturing sales data.

   b) Direct sources

      Data from animal drug registration, wholesalers, retailers, pharmacists, veterinarians, feed stores, feed mills and organised industry associations in these countries might be efficient and practical sources. A possible mechanism for the collection of this information is to make the provision of appropriate information by manufacturers to the regulatory authority one of the requirements of antimicrobial registration.

   c) End-use sources (veterinarians and food animal producers)

      This may be appropriate when basic or direct sources cannot be used for the routine collection of this information and when more accurate and locally specific information is required.

      Periodic collection of this type of information may be sufficient.

      It may be important when writing recommendations on antimicrobial resistance to take into account factors such as seasonality and disease conditions, species affected, agricultural systems (e.g. extensive range conditions and feedlots), dose rate, duration and length of treatment with antimicrobials.

      Collection, storage and processing of data from end-use sources are likely to be inefficient and expensive processes unless carefully designed and well managed, but should have the advantage of producing accurate and targeted information.

2. Categories of data

   a) Requirements for data on antimicrobial use

      The minimal data collected should be the annual weight in kilograms of the active ingredient of the antimicrobial(s) used in food animal production. This should be related to the scale of production (see point 3 below).

      For active ingredients present in the form of compounds or derivatives, the mass of active entity of the molecule should be recorded. For antibiotics expressed in International Units, the calculation required to convert these units to mass of active entity should be stated.

      If a Member has the infrastructure for capturing basic animal antimicrobial use data for a specific antimicrobial, then additional information can be considered to cascade from this in a series of subdivisions or levels of detail. Such a cascade of levels should include the following:

      i) The absolute amount in kilograms of active antimicrobial used per antimicrobial family per year, or for a specific antimicrobial chemical entity when this information is required.

      ii) Therapeutic and growth promotion use in kilograms of the specific active antimicrobial.

      iii) Subdivision of antimicrobial use into therapeutic and growth promotion use by animal species.

      iv) Subdivision of the data into the route of administration, specifically in-feed, in-water, injectable, oral, intramammary, intra-uterine and topical.

v) Further subdivision of these figures by season and region by a Member may be useful. *(Note: This may be especially management conditions, or where animals are moved from one locality to another during production.)*

vi) Further breakdown of data for analysis of antimicrobial use at the regional, local, *herd* and individual veterinarian levels may be possible using veterinary practice computer management software as part of specific targeted surveys or audits. Analysis of this information with the local or regional context could be useful for individual practitioners and practices where specific antimicrobial resistance has been identified and feedback is required.

b) Classes of antimicrobials

Nomenclature of antimicrobials should comply with international standards where available.

Decisions need to be made on what classes of antimicrobials should be considered and what members of various antimicrobial classes should be included in the data collection programme. These decisions should be based on currently known mechanisms of antimicrobial activity and resistance of the particular antimicrobial and its relative potency.

c) Species and production systems

Countries should keep a register of all animal use of antimicrobials for individual food animal species (cattle, sheep, goats, pigs, poultry, horses and fish) and for specific *diseases*. This will help to identify possible nonauthorised usage.

3. Other important information

Breakdown of farm livestock into species and production categories, including total live weights, would be most useful in any *risk analysis* or for comparison of animal antimicrobial use with human medical use within and between countries. For example, the total number of food *animals* by category and their weight in kilograms for food production per year (meat, dairy and draught cattle, and meat, fibre, poultry and dairy sheep) in the country would be essential basic information.