

6.1. General prevention strategy and controlled use of antibiotics

Control the use of antibiotics

Antibiotics are one of the tools used on farms in health management and are in priority reserved for a curative use. They must not in any case substitute for insufficient farming practices: sanitary and zootechnical measures remain priority. The most efficient way to reduce antibiotic residue risk is to reduce their use and in particular avoid using them when possible with a good prevention policy. Metaphylaxis, which consists in treating all animals of a same batch, can be justified when isolating the sick animals from the healthy ones is impossible. Preventive antibiotic use is acceptable only if a specific risk analysis is performed, with precise identification of the concerned animal batches, the period of risk and the nature of the infectious pressure.

Antibiotics must be used if a primary or secondary (further to a viral infection for example) bacterial infection is suspected or diagnosed. The veterinarian practitioner must have clinical information acquired during his farm visits in order to reason any antibiotics use. Analyzing farm documents, collecting epidemiological information and performing complementary examinations contribute to a deeper knowledge of the farms. This knowledge helps the practitioner suspect such or such bacterial infection and implement, only in case of a real need, a targeted antibiotherapy..

Bacterial identification is a chosen complementary examination which confirms the need of antibiotherapy and helps choose the adapted antibiotic.

Organised sectors (pigs, poultry) have more systematically recourse to autopsies and bacteriological analyses than in traditional production (dairy or suckling cows...).

The antibiogram enables to identify the antibiotics to which the isolated bacterium is sensitive. Thus allowing adjustment of the first-line therapy often urgent and to extrapolate on the other farm cases. It is one of the elements for selecting the antibiotic but must not be the only one. Moreover, possible antibioresistance phenomena can be highlighted and therefore provide precious information to epidemiosurveillance networks.

The antibiotic chosen by the prescriber must have a pharmacodynamic activity towards the incriminated bacterium. The medicine containing the antibiotic must drive it to the infection site in sufficient concentration. The knowledge of these data by the veterinarian is fundamental because it provides them with a critical and pertinent insight into the armamentarium. By **choosing the right antibiotic at the right time, the veterinarian contributes to reducing their use and therefore the residue risks.**

Practically, it is advisable to prescribe narrow spectrum antibiotics guaranteeing an improved efficiency and a decrease of the selection pressure on the commensal flora. The recourse to new generation antibiotics must be reasoned and parcimonious. For example, penicillin G, an ancient molecule, remains very active on a germ like *Streptococcus uberis*. The association of antibiotics must be used in moderation and respect the synergy and additivity rules.

Use antibiotics to avoid residue risks

The use recommendations validated by the Product Market Authorization must be respected. They concern the destination species, indications and posology.

The posology, administration rhythm, treatment length, as well as the administration route must be scrupulously respected. As soon as one of these parameters is modified, it is no longer possible to apply directly the withdrawal time without previously consulting the veterinarian. The latter can fix a new withdrawal time respecting the “cascade” rules, taking into account the standard withdrawal times (for the cases provided by the cascade) and being able to scientifically sustain this choice to guarantee the absence of residue in food of animal origin. In any case, his responsibility is committed.

Respecting the administration route is essential to ensure a good diffusion of the antibiotic and control the residue risks.

Extra label use of antibiotics (in other words, modifying the use conditions provided by the Product Market Authorization) must remain exceptional. In practice, the latter should be limited to so-called “minor” species (representing a too limited market for the laboratories to develop specific treatments) and to orphan indications (for which, due to their limited occurrence, no test of a wide enough spectrum has been performed, which leads to the absence of official indication). In any case, extra label use must be compliant with the “cascade” decision tree. The latter must be used following chronologically the described steps. In Europe, the substances used must be recorded in one of the annexes I, II, III of the Regulation 2377/90 (MRL) and standard withdrawal times must be applied (minimum 7 days for milk and eggs, 28 days for meat). Particular attention must be given in this domain to avoid any drifting that could be detrimental to risk prevention.

The prescription sheet materializes the prescription and specifies the treatment modalities to be implemented by the farmer. **It fixes the withdrawal time** during which the food of animal origin must be withdrawn. **The prescription, formalized by the prescription sheet, must be explained to the animal owners to ensure the treatment and the withdrawal time are respected.** It is also a key element for traceability as, in most countries, the farmer must keep all prescriptions (in France, for 5 years for the farmer and 10 years for the veterinarian).

The farm register: a key element for the monitoring of medicine use

In most countries, the farmer and the veterinarian must record their interventions on animals in a farm register.

Initially viewed as a regulatory constraint, this tool is becoming for many farmers and veterinarians an irreplaceable **indicator of the herd’s health**.

Records compliant with regulation requirements valorize these data: pre-assessment done by the farmer, medical assessment done by the veterinarian.

The implementation of treatment protocols, the definition of alert thresholds and necessary follow-up visits are based on the above.

It is obvious that data computerization makes the analysis easier which is more and more pertinent and precise.