

## CBPP: VACCINATION AND ANTIBIOTICS

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- A regular effective and efficient program of **mass vaccination or selective vaccination** will have a significant impact on morbidity and mortality losses resulting in economic benefit to livestock farmers but does not lead to eradication of the disease.
- **Antibiotic treatments**, given the problems related to residues in meat and milk and AMR, have to be carried out under the direct control of Veterinarians or Animal Health Technicians or, using a new approach under the control of traditional leaders or farmers leaders.
- **Antibiotic treatments have so far shown through experiments that they** can reduce morbidity, mortality, and production losses caused by CBPP infection, but does not lead to cure of the disease.
- **Antibiotic treatments have also shown through experiments** to have a considerable impact on the transmission of CBPP and reduction of number of infecting animals. But this has to be carefully studied in the field conditions and information from there used to design a pragmatic programme.
- **Combined vaccination and drug treatment programs** could offer greater impact than either approach alone. In a primary outbreak of CBPP, under veterinary control, where it is not possible to apply stamping out, the judicious and strategic use of antibiotics and subsequent vaccination, associated with the surrounding vaccination of neighbouring farms, could be a valid approach. Using this approach, the infected cattle must be recommended for slaughter after the antibiotic withdrawal period as a precautionary measure to ensure that they are not carriers of the disease. Please remember T1/44 is a live vaccine.
- Regular control programs based, managed by veterinarians, **on treatment with antibiotics and subsequent vaccination** focused on the highlighted infection foci, lead to a reduction in morbidity, mortality and production losses, even if the farms in contact do not practice vaccination. Please remember T1/44 is a live vaccine.
- Currently due to economic issues, personnel shortages, political-military instability, **annual mass vaccination programs** are unsustainable in many African countries. This has led to perpetuation of the disease.

Vaccination strategies should be aimed at achieving specific epidemiological objectives within an achievable national plan, see Zambia.

- The control of **animal movements**, in the current socioeconomic conditions in sub-Saharan Africa, is in many situations unachievable with consequent lack of significant impact on the control of CBPP. Also in this case, **movement control, related, if possible, to animal identification** should be aimed at achieving specific epidemiological objectives within a feasible national plan, see Zambia. Lack of movement control has led to sometimes disease spilling over to other epidemiological zones thus distorting the control programmes

### **Main veterinary actions involving the use of antibiotics in the Italian and African context**

1. **Authorisation and control system** for veterinary medicines produced in Italy or imported from Europe (comparable to those produced in Italy and therefore authorisation not required) and from outside Europe (not comparable and therefore authorisations required);

In many African countries, ***the import of veterinary drugs is not conditioned by an authorisation from the national government***. No quality control concerning purity or correspondence to the concentration declared on the packaging is carried out. Many drugs are smuggled into African countries.

2. **Controls on the commercial supply chain** of antibiotics that take into account the correct storage of antibiotics in relation to environmental conditions and the presence of specialists/pharmacists in the marketing of these products;

***Veterinary drugs are often sold in open markets by generic sellers, often in open-air stalls*** and without any care to preserve them from high temperatures and adverse weather conditions.



In some cases, the drugs are sold directly in syringes.



3. **Herd and animal register** with unique ID number for single animal and individual herds;

In many African countries there is no herd and animal register, no system of individual identification of herds and animals.

4. **Veterinary prescription** mandatory to buy drugs and written by a veterinarian, actually Electronic Veterinary Prescription. Clear information on the identification number of the animal treated with antibiotics, diagnosis or suspected diagnosis, the drug prescribed, the dosage to be used, duration of therapy and withdrawal times;

- Owners across the Africa continent purchase and administer veterinary medications to animals **without prescription and advice from animal health professionals**;
- This practice is favoured by the availability of over-the-counter medicine to the general public without any prescription made by a recognized veterinarian;
- It is a common practice for animal owner prescriptions of AM even for minor illnesses;
- Across Africa antimicrobials **are inappropriately used, for example low dose, long or short duration of antimicrobial treatment, non-respect of the withdrawal period**, without appropriate laboratory investigation (there is a lot of treatment from experience);
- Animal owners initiate treatments before the case is presented to a veterinarian.
- Prescribing broad-spectrum antibiotics when equally effective narrower spectrum antibiotics are available.

Some African data:

- 10.25% of farmers never sought professional advice, and 86.75% used antibiotics (AM) to treat for example CBPP;
- For CBPP Tylosis is the most commonly used antibiotic by 84.87%, followed by Oxytetracycline 14.39% and Enrofloxacin 0.89%;
- Others studies revealed that the most frequently prescribed and used AM is Tetracycline (66 %), followed by  $\beta$ -lactam (32 %) and then Macrolides (25 %). This is critical when considering the importance of these AM in human medicine and thus, the need to optimize their usages;
- 34% of cattle keepers practice self-treatment to cattle;
- 20.98% do not complete the dosage.

5. **Pharmaco-surveillance activities in the farm** to verify the use of veterinary drugs and compliance with withdrawal times by on-site verification of farm registers and paper/informatic veterinary prescriptions;

**Many of Africa's veterinary services are unable to carry out such control activities** due to staff shortages, economic problems, political-military instability, and a lack of veterinary laboratories available and able to carry out residue detection, for example from milk.

Some data in the African context:

- 28.06% of farmers do not follow the withdrawal period;
- Drug overuse, inappropriate use such as the use of antibiotics for not bacterial infections and inadequate stewardship by users;
- Treatments are made, often using unsterile and dirty syringes:
- Most cattle keepers 65.74% do not know about AMR.



6. **Pharmaco-surveillance activities in abattoirs and establishments producing food of animal origin** such as meat, milk, eggs, etc. Checking of antibiotics/veterinary drugs use and compliance with withdrawal times by collecting *ad hoc* biological material;

Small scale establishments producing food of animal origin, in some cases their existence or location is not known to the African Veterinary Services.

Many of the African's veterinary services are unable to carry out such control activities due to staff shortages, economic problems, political-military

instability of veterinary laboratories available and able to carry out residue testing.

7. *Pharmaco-surveillance activities in shops or open markets* marketing food of animal origin;

Shops marketing food of animal origin or open markets, in some cases their existence or location is not known to the African Veterinary Services. Many of the African veterinary services are unable to carry out such control activities due to staff shortages, economic problems, political-military instability of veterinary laboratories available and able to carry out residue testing.

WOAH PVS data concerning Veterinary Drugs

Country	Authorisation and control for veterinary medicines produced in the country or outside	Controls on the commercial supply chain	Herd and animal register	Veterinary prescription	Pharmaco-surveillance activities in the farm	Pharmaco-surveillance activities in abattoirs and establishments producing food of animal origin	Pharmaco-surveillance activities in shops or open markets	Treatment directly managed by breeder
1	No	No	No	No	No	No	No	Yes
2	No	Yes, sale but also sale of fake antibiotics and trypanocides	No	No	No	No	No	Yes
3	Yes	Yes	No	Yes, but not for some antibiotics and antiparasitic drugs	No	No	No	Yes
4	No	No	No	No	No	No	No	Yes
5	Yes	Yes/No	Yes	Yes	Yes/No	Yes	Yes	Yes
6	Yes	No	No	No	No	No	No	Yes
7	No	No	No	No	No	No	No	Yes
8	Yes	Yes	Yes	Yes	No	Yes	No	Yes
9	No	No	No	No	No	No	No	Yes
10	No	No	No	No	No	No	No	Yes
11	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
12	No	No	No	No	No	No	No	Yes
13	No	No	No	No	No	No	No	Yes

In the African context it would be necessary:

- a. **Drafting a national legislation on veterinary drug management and pharmaco-vigilance;**  
**Availability and enforcement of drugs regulations in the country.** Activities to be carried out with the support of national and international experts funded by international donors.
- b. **Training on Basic diagnostic activities included Remote Veterinary Assistance**  
The most important perceived drivers of AMR were excessive prescription by animal healthcare professionals followed by improper use and use of AM without a proper diagnosis. **Almost all African animal health professionals (95 %) identified the lack of diagnostic and AM susceptibility tests as a major concern. On-site and online training activities, with involvement of local Veterinary Schools or National Veterinary Laboratories, funded by international donors, focussed on how to made a suspicious diagnosis** is a fundamental topic for training activities. These training activities will be addressed to veterinarians, animal health technicians but, in pastoral and/or not easily accessible areas, also traditional leaders or breeder leaders. The Remote Veterinary Assistance by experts will be created to help make a presumptive diagnosis or define an appropriate therapy using specific Mobile apps.
- c. **Training on Therapy, Pharmaco-surveillance and AMR of stakeholders (veterinarians, pharmacists, health technicians and meat Inspectors, breeders and traditional leaders), included Remote Veterinary Assistance;**  
The animal health professional requires the appropriate skills set and experience. **On-site and online training activities, funded by international donors, with involvement of local Veterinary Schools or National Veterinary Laboratories, focussed on how to choose the best drugs to be prescribed, the dosage to be used, duration of therapy and withdrawal time** is a fundamental topic for training activities. These training activities will be addressed to veterinarians, animal health technicians but, in pastoral and/or not easily accessible areas, also traditional leaders or breeder leaders. The Remote support by experts will be created to support an appropriate therapy using specific Mobile apps.
- d. **Guidelines for the careful use of antibiotics in the livestock context;**

## Antimicrobial Stewardship (AMS).

- e. ***Funding for veterinary antimicrobial resistance research in the African context;***
- f. ***Pharmaco-surveillance activities in the farms, abattoirs, shops or open market.***

## Conclusions

Multiple factors have been identified as affecting the veterinary prescription and incorrect use of AMs by veterinary practitioners: lack of specific legislation concerning the import of veterinary drugs, their control, marketing and use. The lack of a suspected clinical and/or pathological diagnosis, of diagnostic infrastructure to guide the treatment of animals by their owners, leads to an excessive and untargeted use of antibiotics. While waiting for proper diagnostics facilities, the development and use of field-friendly disease diagnosis, remote diagnostic assistance based on clinical and pathological evidence collected through films and photos taken with mobile and management tools should be encouraged.

It is also imperative to reinforce awareness among the main actors in the animal health sector (farmers, local leaders, sellers and veterinarians) on judicious use of AM, strengthen existing veterinary legislation, surveillance system on AM as well as biosecurity measures at farm level.

Specific gaps in AM misuse practices and attitudes at country and regional levels should be identified and targeted through veterinary schools and online training and continuing biosecurity educational programs among key stakeholders, emphasising the role of breeder leaders and traditional leaders in pastoral areas and instable areas.

A One Health education approach cannot be overemphasized considering the concomitant use of AM in human medicines and the potentials of extra AM exposures in humans through consumption of AM residues in animal origin foods.



## **Annex 1**

### **ClassyFarm**

ClassyFarm is an all-Italian innovation, the result of a project initiated and financed by the Ministry of Health.

It is available to official veterinarians, private veterinarians and breeders engaged in monitoring, analysing the data collected and directing the interventions on the farm in order to comply with and fully implement the recent European Animal Health Law and Official controls.

In this way, the system improves and facilitates collaboration and dialogue between breeders and the competent authority to raise the level of safety and quality of products in the agro-food chain, strengthen the prevention of animal diseases and the fight against antimicrobial resistance and make official controls by the competent authorities more efficient. At the same time it offers breeders the conditions to improve and strive for excellence.

Included in the national veterinary portal ([www.vetinfo.it](http://www.vetinfo.it)), ClassyFarm enables the collection and processing of data on the following areas of evaluation

- biosecurity;
- animal welfare;
- health and production parameters;
- animal nutrition;
- consumption of antimicrobial drugs;
- pathological lesions detected at slaughter.

**[www.vetinfo.it](http://www.vetinfo.it): Website of Veterinary Information Systems**

The Veterinary Information Systems website was set up, at the behest of the Ministry of Health, with the aim of collecting and presenting data, health and otherwise, useful for governing the national Animal Health and Food Safety system, with particular attention to the definition of health risks along the entire production chain, from the production of foodstuffs for animals to the marketing of foodstuffs for human consumption.

It provides a range of public services such as news, references to current legislation, information of interest, statistical data and links to other national and international sites consistent with the area.

The portal is also the single access point for institutional subjects, companies and operators in the sector, who feed it and use it in various ways through the specific functions of the various subsystems that relate to it.

In the reserved area, applications are made available for the management of the National Zootechnical Registries, for the management of control and self-control activities in livestock farms and other structures of veterinary interest, and applications for alerts and periodical reports.