



Antimicrobial resistance in livestock in the Lao People's Democratic Republic



Antimicrobial resistance (AMR) is the ability of microorganisms to withstand antimicrobial treatments. This phenomenon can be seen as a natural occurrence; yet it can also be accelerated by humans. In recent years, antimicrobials have been used unnecessarily, been overused, misused, underused by not completing the full course prescribed and used as growth promoters in livestock production. These harmful practices have sped up the development of AMR in the human health and livestock sectors. Globally, in 2010, 63 000 tons of antimicrobials were used in the animal husbandry sector. This number is predicted to increase to 105 000 tons in 2030.

The AMR micro-organisms can spread through the food chain and the environment and infect humans. With these resistant micro-organisms, the antimicrobial will then no longer work to treat the infection or disease in the new host. This results in treatment failure, higher costs, longer recovery times for patients, and in severe cases people may die. In fact, it was estimated that there were 1.27 million deaths globally attributed to AMR in 2019. Many researchers and scientists worry that if no actions are taken to remedy and prevent AMR, there is a high risk that we could return to a pre-antibiotic era.

The context of the Lao People's Democratic Republic

Many countries, including the Lao People's Democratic Republic, are vulnerable to AMR at present. Local knowledge and the awareness on the proper use of antimicrobials are limited, especially in terms of the consequences towards human health, agriculture and the environment. The urge to use antimicrobials to help boost animal growth for commercial purposes is a real concern, as this will increase AMR dramatically. There is a lack of antimicrobial use (AMU) compliance with international regulations. The AMU management including drug prescriptions and medication supply needs to be strongly controlled. In addition, AMR in itself is quite new to many people in the related sectors, and more expertise in these areas is needed.

To monitor AMU and to detect, prevent and reduce the impact of AMR, the Emergency Center for Transboundary Animal Diseases (ECTAD) of the Food and Agriculture Organization of the United Nations (FAO) works with the Department of Livestock and Fisheries (DLF) of the Ministry of Agriculture and Forestry (MAF), developed a cross-sectorial national AMR strategy and a national action plan on AMR. These strategies aim to reduce the threat of AMR in agriculture, livestock, fisheries and food production. A multi-stakeholder engagement process has been used to achieve five key strategic areas: (1) improving awareness and understanding of antimicrobial resistance, (2) surveillance and research, (3) infection prevention and control, (4) optimizing the use of antimicrobials, and (5) strengthening governance.

Improving awareness and understanding on AMR

• National workshops and symposiums have been conducted annually to help raise awareness of AMR among key decision makers and various stakeholders. Both the World Antimicrobial Resistance Week (WAAW) and the One Health Symposia achieved AMR awareness and have

been fully supported by government officials and the media, since 2019.

• Various AMU/AMR communications materials have been produced and distributed every year to convey specific key messages for different target audiences throughout the country. These included: bags, caps, T-shirts, calendars, notebooks, videos and posters. Digital and printed press releases also contributed to AMU/AMR awareness raising.



Communications materials on AMR tailored made for different stakeholders

Strengthening AMR surveillance system

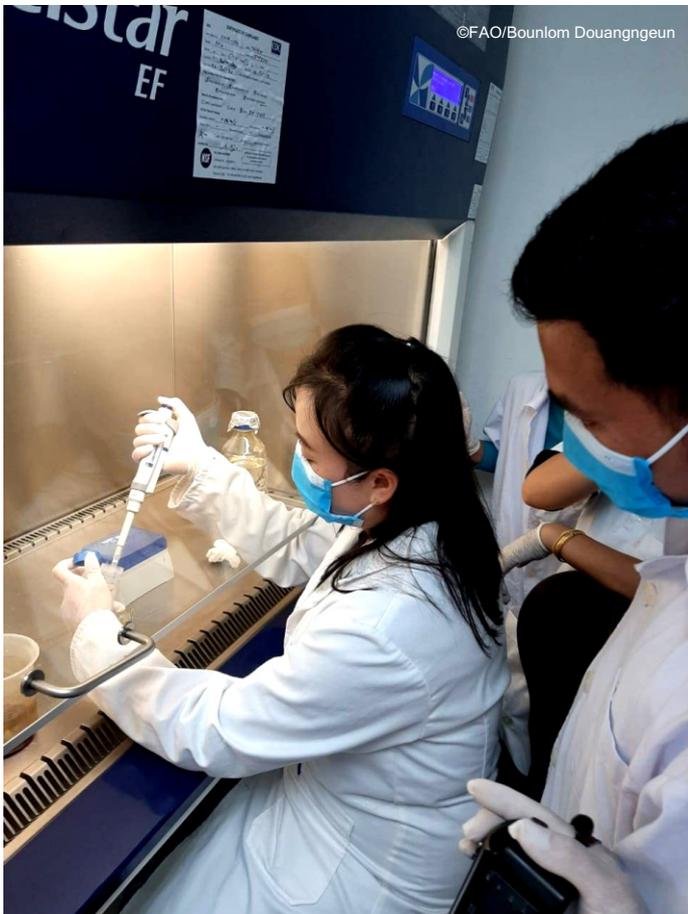
• The AMR Surveillance Control Committee (ASCC) was established to monitor AMU and AMR in the country.

• Epidemiology and AMR surveillance capacity was strengthened.

• In 2018/2019 AMR surveillance in animals in three pilot provinces (Vientiane Capital, Savannakhet and Champasak province) was conducted to study AMR in Salmonella spp. and E.coli, in healthy pig at slaughterhouses. In 2020/2021, the study was expanded to five provinces (Luangprabang, Xiengkhouang, Vientiane Capital, Savannakhet and Champasak) to collect specimen from both chicken and pigs. Results indicated that AMR does exist in bacteria isolated from both pigs and chickens, especially for the antimicrobials; tetracycline, ampicillin, sulfamethoxazole, colistin and chloramphenicol*.

Improving infection prevention and control

- An agreement on AMU in the animal husbandry and fishery sectors was approved by DLF of MAF. The agreement was printed and distributed throughout the country.
- Selected government officials were recruited to build research capacity and increase knowledge on AMU and AMR, in collaboration with Mahidol University from Thailand.
- A number of training courses were made available and DLF staff have been trained on AMU and AMR issues.



Optimizing the use of antimicrobial agents in humans and animals

- Studies on mapping the routes and flows on AMU were conducted for five provinces.
- Results of studies on humans and animal bacteriology have been shared among laboratories' staff. Training on this topic have been conducted twice per year.

- A series of AMR manuals were produced in Lao language on AMU surveillance in the hospital and AMU estimations in the hospital.
- Lao Adult Antimicrobial Prescribing Guidelines and Lao Pediatric Antimicrobial Prescribing Guidelines were approved and made available and distributed.
- Regular field monitoring has been conducted among pharmacies to reduce issues on unregistered medicines, with punishment for those who breach the rules and regulations.
- Data on AMU at three hospitals in Vientiane Capital was collected.

Improving coordination and budget support

- The Multi-Sectoral Coordinating Group (MCG) on AMU and AMR was established to help facilitate the work on AMR.
- The inclusion of Ministry of Natural Resources and Environment to get involved in the work of AMR has been essential. This means that more sectors could be included as additional focus areas of AMR.

Challenges

- Due to the impact of COVID-19, there was a series of positions and responsibilities shuffled among key personnel involved in the work of AMU and AMR.
- Rules on travel restriction and physical distancing delayed the progress to be made on combatting AMR.
- With new rules and regulations updated to reflect the COVID-19 situation, documentation processes take longer time to proceed.
- Funding to support activities is quite limited, hindering the work to be implemented.
- Capacity of staff involved in AMU work is quite restricted. Part of this could be contributed to the fact that AMU work is not well appreciated.
- Knowledge on AMU and AMR is still low, especially among rural farmers.

Pathway for better impacts

- Funding and financial sustainability are always issues. Internal and external resources need to be mapped and identified, and whether the national research agenda has included funding to cover AMR.
- Secure more funding, especially from new donors, to maintain and extend the work on AMR.
- Awareness raising among key stakeholders, especially farmers and pharmacies, is always needed. In fact, it is one of the urgent actions to be implemented to help stop bad practices on the misuse of unnecessary antimicrobials.



- Antimicrobial resistant bacteria in animals can reach out the food chain and human can get infected through consuming contaminated food. Because of this risk, there is a need to continue AMR surveillance in animals.
- Studies and research on AMR related topics should be encouraged, especially among government officials. This will increase both the skills of the personnel and the insight of AMR in the Lao context.

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- Technical trainings on AMR and the best practices need to be provided to relevant agencies at all levels (national, provincial and local). This is to ensure that they would be equipped with relevant knowledge and skills to perform their duties and contribution to stop AMR prevalence in the Lao People's Democratic Republic. Content could be tailored to, for instance, good practices and prudent AMU, and residues testing in feed.
- To ensure a multi-stakeholder engagement is well practiced, additional government agencies and organizations need to be invited to support the work on AMR, such as additional human health, animal health and environmental sectors.



- The focus on AMR should be extended beyond food and agriculture, to cover other sectors such as wildlife and ecosystems.
- Examples on passive surveillance should be observed and replaced active surveillance to help reduce some costs.
- Coordination among and across agencies and sectors needs to be revised to ensure timely responses and actions.
- Data base should be revised in terms of its format, standard and rules; so that, data could be easily synchronized and used across agencies and sectors.

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