

Advisory Council on Food and Environmental Hygiene

**Progress of the Work on Tackling the Threat of
Antimicrobial Resistance in Food Animals**

INTRODUCTION

This paper briefs Members on the progress of the work on tackling the threat of antimicrobial resistance (AMR) in food animals in Hong Kong by the Agriculture, Fisheries and Conservation Department (AFCD).

BACKGROUND

2. In recognition of the major threat posed by AMR to global public health, the Government announced in 2016 the setting up of a High Level Steering Committee on AMR (HLSC) to formulate strategies and action plans on AMR. The Hong Kong Strategy and Action Plan on AMR (Action Plan) was subsequently launched on 10 July 2017¹, detailing the Government's commitment to controlling AMR across different sectors. Key areas have been identified to slow down the emergence and prevent the spread of AMR.

3. AFCD has been implementing various measures to contain the threat of AMR in livestock and fish farms in Hong Kong, progress of which since the last report of September 2017 (ACFEH Paper No. 8/2017) is set out below.

PROGRESS OF IMPLEMENTATION

Key Area: Surveillance and research

4. Currently there are a total of 72 livestock (pig and poultry) farms, some 330 pond fish and 930 mariculture farms in Hong Kong supplying live food animals to the local market. A farmer may acquire certain

¹ The Action Plan is available at: https://www.chp.gov.hk/files/pdf/amr_action_plan_eng.pdf

antimicrobials with a permit issued by AFCD² and administer antimicrobials to animals. AFCD officers regularly inspect these farms. There is thus far no evidence found during these inspections that antimicrobials are being misused or abused in local livestock and aquaculture farms.

5. To enhance surveillance on antimicrobial usage (AMU) and monitoring the AMR issue in local farms, AFCD commissioned a consultancy study in October 2017 to devise a surveillance programme. The Consultant has drawn up the final recommendations on the surveillance programme which were endorsed by the Expert Committee (EC) on AMR under HLSC in March 2019. Details of the surveillance programme and corresponding progress of work are set out in the ensuing paragraphs.

AMU Surveillance

6. Aside from regular farm visits, AFCD conducted specific inspections to 42 pig farms, 29 poultry farms and 340 pond fish and mariculture farms in 2017 and 2018 concerning AMU, during which AFCD impressed upon food animal farmers the importance of prudent and responsible use of antimicrobials and collected information on AMU, including the types of antimicrobials in stock, the purpose of usage and the manner in which antimicrobials were used. In addition, as a preliminary means to assess AMU in pig farms, AFCD tested 168 pig urine samples collected in local pig farms, and found antimicrobial residues in 33 samples. The results were cross-checked with the AMU records submitted by the farms concerned. Further communication with the farms concerned confirmed that antimicrobials had been used for disease prevention and treatment purposes only.

7. Based on the AMU information collected and the situation of local food animal farms, the Consultant engaged by AFCD has devised an AMU surveillance system that requires voluntary reporting of AMU data by farmers on a monthly basis. All AMU records submitted will be audited by AFCD through data verification and laboratory testing. In line with systems in overseas countries, the quantities of AMU will then be measured against the total amount of meat produced by animal species in

² In accordance with section 6(2) of the Antibiotics Ordinance (Cap. 137), a written permit issued by the Director of Agriculture, Fisheries and Conservation (DAFC) to local livestock farmers enables them to purchase and possess 20 types of antimicrobials listed in the permit for treatment of diseases of farm animals.

specific units³ and by class of drug for analysis of the overall AMU situation in each food animal species and compilation of annual AMU reports for farmers' reference.

8. As the surveillance programme relies on voluntary reporting, it is important to put in place an audit system to detect any non-reporting or inadvertent use of antimicrobials, based on regular testing of feed and faecal wastes of livestock for the presence of antimicrobial residues. As of July 2019, audit tests of 72 samples of non-medicated livestock compound feed have been performed. Very low levels of antimicrobial residues have been detected in 24 of the samples, while low to medium levels of antimicrobial residues have been detected in four of the samples. Since the majority of the positive results were at very low levels and having regard to further communication with the farms concerned, it was concluded that the presence of residues was most likely due to contamination of the samples in the on-farm feed mills which had recently been used to mix medicated feed. Farmers have been advised to mix feed concentrates and ingredients according to manufacturers' recommendations. AMU audit tests on faecal wastes are expected to commence in the fourth quarter of 2019.

9. Besides, AFCD has also tested some Chinese medicinal products that are marketed for use in livestock. As of July 2019, 32 products have been tested with two found to contain low levels of antimicrobial. Livestock farmers have been advised to cease using those two products.

10. AMR in fish may come from AMU or cross contamination of the environment. About 120 fish farms under AFCD's Accreditation Fish Farm Schemes (AFFS) have all along been reporting AMU to AFCD on a regular basis. AFCD officers visit both AFFS and other fish farms to collect samples for analysing antimicrobial residues. As of July 2019, 352 fish samples and 97 fish feed samples were tested, with no antimicrobial detected. Findings thus far show that antimicrobial is not commonly used in local fish farms.

11. AFCD targets to implement the "veterinary prescription-only medication supply" measure in the second half of 2020, whereby antimicrobials cannot be administered to food animals by farmers unless under the prescription of registered veterinary surgeons.

³ The specific units include the target animal biomass (TAB), population correction unit (PCU) and defined daily dose for animals (DDDvet).

AMR Surveillance

12. The range of antimicrobials to be covered in the surveillance programme for determining AMR is determined by drawing reference from overseas, such as the United States (US) and European Union (EU), and having regard to the critically important antimicrobials in human medicine listed by the World Health Organisation (WHO). The monitoring of resistance to these antimicrobials in livestock covers three types of bacteria – commensal bacteria (which are present in animals and humans, such as non-pathogenic strains of *E. coli* and *Enterococci*), zoonotic bacteria (which may be transmitted from animals to humans causing diseases, such as *Salmonella* and *Campylobacter*) and pathogens (which may cause diseases to animals, such as pathogenic *E. coli*). Appropriate sampling and testing methodologies to perform relevant tests have been identified by the Consultant. Among the bacterial species to be tested, *E. coli* serves as the indicator organism. At least 200 samples each from pig and chicken farms have to be collected annually for analysis of the AMR situation in commensal and zoonotic bacteria and for determination of its variation over time. In addition, sampling and testing on pathogens will be performed, having regard to, among others, the occurrence of disease cases in the food animals.

13. AMR surveillance on fish will cover three types of fish pathogens: *Photobacterium* spp and *Vibrio* spp in marine fish, and *Aeromonas* spp in pond fish. We recognise that there may be differences in the microbiome for different fish species and that multiple species are likely to be present in the same pond. Thus, the monitoring system for fish may be subject to change over time having regard to the experience during the first few years of implementation and developments in other countries. AFCD aims to collect 170 isolates of each group of organisms.

14. The Consultant has identified suitable laboratories to perform the various tests in Hong Kong and overseas.

15. Further analysis of the results will be conducted to assess if any follow-up actions should be taken to advise farmers on changing their AMU and enhancing their farm management practices, as well as to consider the AMR problem in the One Health framework covering both human and animal health.

Key Area: Optimise Antimicrobial Use

16. For the implementation of the “veterinary prescription-only

medication supply” measure, funding has been approved and provided under the Sustainable Agricultural Development Fund and the Sustainable Fisheries Development Fund for the Jockey Club College of Veterinary Medicine and Life Sciences, City University of Hong Kong (CityU) for developing the provision of veterinary services to local food animal farms and conducting practical studies on fish disease management. We anticipate that the measure will take place in the second half of 2020 when the services become mature. AFCD will then stop issuing antibiotic permits (paragraph 4 above refers) to ensure prudent and responsible use of antimicrobials in local food animal farms. AFCD is also in the process of developing domestic guidelines on the proper use of antimicrobials for food animal producers, taking into account the local situation as well as standards adopted by international organisations⁴.

Key Area: Infection prevention and control

17. Aside from visiting local food animal farms to educate farmers on the concept of minimising AMU through good farm practices and disease prevention, AFCD so far has organised 70 AMR education seminars for farmers (see paragraph 21 below for details). In the long run, AFCD will devise tailor-made farm management plans to help farms address AMR issues with assistance from CityU.

18. In addition, representatives of AFCD attended various local and overseas training courses and conferences relating to AMR in order to keep their officers abreast of the updated scientific knowledge and latest development in AMU and AMR control.

Key Area: Improve awareness

19. AFCD has launched a publicity campaign to impress on the public the challenge of AMR, under the theme “Let’s take action against AMR (共同一起應對抗菌素耐藥性)”. Details on specific actions undertaken in the past year are set out in **Annex**.

20. A practical AMU/AMR guidance booklet was produced in February 2018 for distribution to fish farmers. A promotional video and an animation to impress on the public that the Action Plan for tackling AMR has gained the support of local livestock farms have been put onto the Internet.

⁴ They include the World Organisation for Animal Health (OIE), the Food and Agriculture Organisation of the United Nations (FAO) and WHO.

21. To date, six education seminars conducted by various overseas and Mainland experts on AMR have been organised for local livestock farmers, educating them on the current global situation of AMR and its relevance to food animal farms, the importance of imposing control measures to contain the threat of AMR at the level of food animal farms and exercising prudent use of antimicrobials. Another 64 seminars have been conducted for fish farmers to educate them on the concept of AMR and the importance of prudent use of antimicrobials.

22. Further to the survey for assessing the knowledge, attitude and practices (KAP) of local food animal farmers conducted in January 2018, AFCD has completed another round of KAP survey from November 2018 to January 2019. Results of the second survey showed that the KAP of livestock farmers has been enhanced and farmers are more willing to take necessary actions to address the AMR issue. Farmers' needs and concerns associated with the problem of AMR were also identified, including how to arrange laboratory testing of animal residues in feed. AFCD will provide the public with information on the work in containing AMR in local livestock farms so as to induce confidence in consumers in locally-produced meat. Additional surveys will be carried out regularly in future to keep monitoring and assessing the gaps in farmers' KAP.

ADVICE SOUGHT

23. Members are invited to note the progress of AFCD's work on AMR set out above.

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Specific actions taken under AFCD's publicity campaign

- (a) Education materials including posters, pamphlets and souvenirs have been produced and distributed to local farmers and veterinarians as well as disseminated through community halls/centres;
- (b) Advertisements have been placed at MTR stations, MTR trains and minibuses, with the key message 「Acknowledge the Fact, Mitigate the Threat, Rapidly We Act / 掌握現況、防患未然、迅速行動」, echoing the indispensability of grasping the latest knowledge on the causes and development of the AMR problem through surveillance, research and acknowledgement and taking appropriate action to tackle it and contain its threat;
- (c) A 3-D animation has been produced with the public as the target audience to educate them on the situation and control of the AMR problem on livestock farms. It was shown at five roving exhibitions held between March and June 2019 and on MTR trains between March and April 2019.
- (d) Five roving exhibitions with information panels, interactive games and free souvenirs have been organised at five different shopping malls to promote awareness and enhance knowledge in the public since March 2019. The sixth roving exhibition will be held in September 2019.