For discussion on 13 July 2020

LegCo Panel on Food Safety and Environmental Hygiene

Progress of the Work on Tackling the Threat of Antimicrobial Resistance in Local 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 2019 (LC Paper No. CB(2)1914/18-19(01)) 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 920 mariculture farms in Hong Kong supplying live food animals to the local market. A farmer may acquire certain 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 fish farms.

5. To enhance surveillance on antimicrobial usage (AMU) and monitoring of

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

 $^{^2}$ 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.

the AMR issue in local farms, AFCD has officially implemented a surveillance programme devised through a consultancy study for AMU and AMR on local food animal farms since June 2019. Details of the progress of the surveillance 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 416 fish farms from May 2017 to May 2020 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.

7. AFCD has been collecting AMU reports from livestock farmers monthly since June 2018. Although this AMU report collection is a voluntary scheme, majority of the farmers have recognised the importance of providing information on AMU. From June 2018 to May 2020, the average monthly reporting rate was approximately 74%. For those farmers who were less responsive, AFCD would endeavour to acquire the information from them through continuous education and communication and through industry associations. All AMU records submitted by livestock farmers would be audited by AFCD through data verification for subsequent collation and analysis.

As AMU surveillance on livestock farms relies on voluntary reporting, 8. auditing systems to detect any non-reporting or inadvertent use of antimicrobials were also put in place, based on regular testing of feed and faecal wastes of livestock from all farms for the presence of antimicrobial residues. As of May 2020, audit tests on 154 samples of non-medicated livestock compound feed for pigs and chickens have Of these only 4% of samples contained levels of antimicrobials been completed. suggesting the feed was medicated. Low levels of antimicrobials were found in less than half of all samples, which most likely represented carry-over of antimicrobials from one batch of feed to another via on-farm feed mills. Carry-over from batch to batch is recognised as a global issue and ways to combat this are being considered by the Food and Agriculture Organization of the United Nations (FAO) and World Health Farmers have been advised to mix feed concentrates and Organization (WHO). ingredients according to manufacturers' recommendations and international guidelines. As to AMU audit tests on faecal wastes, testing of nine samples collected from pig and chicken farms is in progress.

9. A mandatory AMU reporting system for the 120 fish farms under AFCD's Accreditation Fish Farm Schemes (AFFS) has been in place since 2005. AFCD has also implemented a voluntary AMU reporting system for other fish farms since May 2017. To check against the report systems, AFCD officers visit fish farms and collect samples for antimicrobial residues analysis. Over the past three years, a total of 572 samples including fish, feed and water have been taken and tested, and no antimicrobial residues were detected.

10. The detailed analysis of all AMU data from chicken, pig and fish farms is in progress. In line with systems in overseas countries, the quantities of AMU are then

measured against the total amount of meat produced by animal species in specific units³ and by class of drug for analysis of the overall AMU situation in each food animal species. Livestock farmers could find out their level of AMU compared with their peers as they will be provided with individual farm reports with comparative AMU data. Since some farms use considerably more antimicrobials than others, this provides opportunities to develop appropriate stewardship programmes on these farms attempting for a positive effect in reducing overall AMU. Audit testing of feed samples from livestock and fish farms has shown that there is no use of growth-promoting antimicrobials. It is anticipated that annual industry reports for each of the chicken, pig and fish sectors showing the situation in 2019 could be available in the fourth qaurater of 2020.

11. AFCD targets to start implementing the "veterinary prescription-only medication supply" measure by phase in the fourth quarater of 2020, whereby antimicrobials cannot be administered to food animals by farmers unless under the prescription of registered veterinary surgeons, subject to the progress of development of veterinary services for food animal farms by the Jockey Club College of Veterinary Medicine and Life Sciences of The City University of Hong Kong (CityU) as mentioned in paragraph 15 below.

AMR Surveillance

12. AMR surveillance on livestock and fish farms officially commenced in mid-2019 while some data have been collected in 2018 and early 2019 for testing the systems. The surveillance regime was developed 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 WHO. The monitoring of AMR covers three types of bacteria – commensal bacteria (which are present in animals, such as *Escherichia coli and Enterococcus* spp in pigs and chickens and *Photobacterium/Vibrio* spp and *Aeromomas* spp, on fish). These are the indicator organisms. Other organisms include the potentially zoonotic bacteria from pigs and chickens (*Salmonella* and *Campylobacter*) and animal pathogens (from cases of diseases to animals, such as pathogenic *Escherichia coli, Streptococcus suis, Vibrio* spp. and *Aeromonas* spp.).

13. When the surveillance system comes into operation in full⁴, we aim to obtain 170 isolates per annum of each indicator organism by routine culture from each sector annually for analysis of antimicroibial susceptibility including monitoring its changes over time. This target number is in line with EU guidance. In addition, sampling and testing on all other pathogens will be performed, having regard to, among others, the occurrence of disease cases in the food animals. From June to December 2019, AFCD managed to obtain 48, 64 and 52 isolates of target bacteria cultured from chicken farms, pig farms and fish farms respectively for surveillance of AMR. It is anticipated that an analysis of the results will also be published in the report as mentioned in paragraph 10. It should also be noted that, for pond fish and marine fish farms,

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

⁴ Due to outbreak of COVID-19, necessary field work necessary (such as farm inspection) has been affected.

isolating the indicator organisms from the natural bacteria fauna is challenging. For example, only five *Aeromonas* spp. could be isolated among the 21 samples from pond fish farms. Given the scarcity of overseas examples of AMR surveillance programme for fish farms, the regime will be adjusted after gaining more experience.

14. In accordance with the Action Plan, a study to compare the levels of AMR between locally-produced and imported breeding pigs and day-old chicks (DOCs) is to be conducted. Since the import of breeding pigs from the Mainland has been suspended as a preventive measure to guard against African Swine Fever, the study on breeding pigs cannot be conducted. Nonetheless, the work for determining resistance patterns of DOCs from local farms has commenced. 45 locally-produced DOCs were collected and tested in 2019. Of these, 35 were sent to the AFCD's Tai Lung Veterinary Laboratory (TLVL) for testing with conventional culture and sensitivity methods while 10 of them were sent to the Public Health Laboratory of the University of Hong Kong(HKU) for testing using genetic sequencing methods. Conventional testing at TLVL yielded unrewarding results while genetic testing at HKU was proven to be a more sensitive and feasible approach. The comparative study on DOCs will be carried out using genetic sequencing methods, subject to the consent from the Mainland authroties for collection and testing of imported DOCs.

Key Area: Optimise Antimicrobial Use

For the implementation of the "veterinary prescription-only medication 15. 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, CityU for developing the provision of veterinary services to local food animal farms and conducting practical studies on livestock and fish disease management. The progress of the development of veterinary services is being monitored closely and assessed We anticipate that the measure could take place once the regularly by AFCD. veterinary services provided to farmers become mature. AFCD would then stop issuing antibiotic permits (paragraph 4 above refers) to encourage 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 organisations⁵. We anticipate that these guidelines could be available later this year.

Key Area: Infection prevention and control

16. 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 73 AMR education seminars for farmers, educating them on the current global situation of AMR and its relevance to food animal farms, the importance of exercising prudent use of antimicrobials, etc.. In the long run, AFCD will devise tailor-made farm management plans in collaboration with CityU to help farms address AMR issues.

⁵ They include the World Organisation for Animal Health (OIE), the Food and Agriculture Organization of the United Nations (FAO) and World Health Organization (WHO).

17. 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

18. 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 three years are set out in <u>Annex</u>.

19. Further to the survey for assessing the knowledge, attitude and practices (KAP) of local food animal farmers conducted in January 2018, AFCD 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, how to properly record AMU and topics of interest to them for future educational activities. The third KAP survey was distributed to livestock farmers in the first quarater of 2020 and responses are being collected. AFCD will also 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.

ADVICE SOUGHT

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

Agriculture, Fisheries and Conservation Department July 2020

Annex

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 promotional video and a 3-D animation were 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 six roving exhibitions and on MTR trains in 2019, and was subsequently made accessible as online resources; and
- (d) Six roving exhibitions with information panels, interactive games and free souvenirs have been organised at six different shopping malls to promote awareness and enhance knowledge in the public in 2019.