



Antimicrobial resistance surveillance systems and international trade

Prepared by Ericka Calderón S., IICA

The present document describes how the world is using an inter-institutional approach to tackle antimicrobial resistance (AMR) within agrifood production chains; how international organizations are devising new strategies for providing support to the countries designed to promote the mitigation of AMR, which is gradually being brought under control through international trade; and, lastly, how the Inter-American Institute for Cooperation on Agriculture (IICA) has been working on this issue for years with the Latin American and Caribbean (LAC) countries, preparing them for the challenges related to public health, animal health, food safety, the negative economic impact of AMR and future challenges in international trade through the development of surveillance plans across the agrifood chain.



Antimicrobial agents are defined as medicines used to treat bacterial infections in particular, although they may also target viruses, parasites and other microorganisms. Drugs of this kind are essential to preserve human and animal health, as well as animal welfare (OIE 2015).

AMR is an issue that is being discussed increasingly at the global level, as it has a direct impact on public health, agricultural health, food security, food safety, economic development and, in the near future, will also affect international trade. Bacteria have become resistant due to the abuse and misuse of antimicrobial drugs over the years, both in human and veterinary medicine.

In 2016, the United Nations Food and Agriculture Organization (FAO) estimated that 700,000 people die each year from antibiotic-resistant infections, while farm animals and pets increasingly fail to respond to treatments involving the use of antibiotics to combat health problems. The intensification of global agricultural production has led to rising use of antimicrobials, which is expected to double by 2030 (FAOS 2016).

The main problem posed by AMR is reflected in the negative impact that resistant bacteria can have on human and animal health, given the failure of existing antibiotics to combat the

diseases faced by a globalized world in which there are no borders, and the economic impact that this can have on the world's agrifood sector. For this reason, a number of European countries (e.g., Denmark, the United Kingdom and the Netherlands) and other countries in the Americas, including the United States and Canada, have spent years developing integrated health control systems in their main production systems, across the chain.

According to the World Bank (2016), by 2050 drug-resistant infections could cause economic damage on a par with the 2008 financial crisis, with low-income countries potentially losing more than 5% of their gross domestic product (GDP) and 28 million people, mostly in developing countries, being pushed into extreme poverty.

There is strong international pressure for trade in animal products to be rules-based, which would oblige countries to have appropriate AMR mitigation and control mechanisms in place across the production chain to guarantee safe, fair trade. It would also call for the inclusion of the actions and commitment of all the institutions that, in one way or another, are responsible for pinpointing and controlling the presence of resistant microorganisms (ministries of health, agriculture and environment; the productive sector; universities; the pharmaceutical industry; the animal feed industry, etc.).

The role of international agencies in AMR

In recent years, both technical cooperation agencies and other international organizations responsible for setting international trade standards have been developing a range of strategies to help countries deal with AMR.

Since 2006, Codex Alimentarius has established two special action groups tasked with evaluating and managing the possible impact on public health of the presence of resistant microorganisms in animal food chains and in animal feed.

In 2015, the World Health Organization (WHO) called on countries to adopt control measures involving epidemiological surveillance of AMR in human health. The World Organisation for Animal Health (OIE) and FAO have followed suit, also recommending that countries adopt agrifood measures of that kind (from the farm to the table) in an integrated way. Parallel to this movement, IICA has been working on different strategies to mitigate the impact of AMR.

In 2014, IICA launched its groundbreaking AMR program, focused on sensitization and training actions for all LAC countries, as part of its technical cooperation strategy. To increase its response capacity, IICA's main partner

The impact of AMR on international trade would mean that, in 2050, the global volume of real exports would fall by 1.1% in the low-impact scenario and 3.8% in the high-impact scenario.

Source: World Bank 2016.

has been the academy (Ohio State University, Texas Tech and Texas A&M, among others). This was followed, in 2017, by a phase of preparing plans for integrated AMR surveillance across the agrifood chain, working with Ohio State University. In this way, IICA has supported the developing countries step by step with the monitoring and surveillance of their different production systems, giving priority to subjects such as domestic consumption, international trade, and the impact on public health, among other variables. This has ensured that countries are able to efficiently pinpoint any resistant bacteria across the chain, from the farm, slaughterhouses and points of sale, to clinical cases in animals reported by veterinarians and in humans identified in hospitals.

By 2019, IICA had provided cooperation to more than ten LAC countries to help them tackle different challenges and tap opportunities. One of the biggest challenges has been the difficulty that the countries face in achieving adequate intersectoral integration. To



155

professionals

from ministries of health, agriculture and food safety, public diagnostic laboratories, and other government agencies have been trained in the design and development of national plans.



10^{LAC}

countries

have received technical assistance with the design and development of their national AMR surveillance plans for the agricultural sector.



2

countries

have completed their integrated AMR surveillance plans for the agrifood chain.

Source: IICA 2019.

that end, the institutions have begun to work in an integrated way, and the productive sector has come to view public institutions more as partners than as agencies tasked with regulating or penalizing them. Joint work between institutions maximizes the response capacity and allows for more complete, detailed efforts to pinpoint resistant bacteria across the chain.

The national AMR working groups for the agrifood chain, made up of the different institutions involved in the issue, need to invest in good agricultural practices that give priority to disease prevention based on the proper use of drugs. Furthermore, the work of these institutions should be reinforced and underpinned by appropriate public policies that support and make permanent this multisectoral commitment to combating AMR, by means of suitable self-sustainable surveillance systems that monitor AMR in the countries.

○ Opportunities for IICA

LAC has the capacity to invest and focus its efforts on safe, robust integrated epidemiological surveillance for AMR in the agrifood sector. It should prepare for the rules-based international trade that is on the horizon, and regard the systems of other countries that are much more advanced than ours as examples for us to follow rather than barriers to exports of animal products.

AMR challenges

- Improve awareness and understanding of AMR.
- Strengthen knowledge through surveillance and research.
- Reduce the incidence of infection by means of effective hygiene practices.
- Optimize the use of antimicrobial drugs in human and animal health.
- Ensure sustainable investment through research and development.

Source: PAHO 2019.

As a hemisphere, we need to contribute scientific facts to the international debates on the subject. Since the surveillance systems of countries in our region enjoy similar levels of development, we are in a position to help one another in a solidary, proactive manner, endeavoring to achieve a sanitary status for our countries that makes us more competitive in

international trade. That would allow us to diversify our exports and thus penetrate new markets.

The fight against AMR has barely begun. We need to incorporate other public institutions that play a decisive role into these efforts (e.g., ministries of environment), since wastewater, for example, may contain antibiotic residues.

It is up to us to ensure that our countries do not turn back the clock many years as far as the control of AMR is concerned, to a time when people died of an infected tooth due to the lack of antibiotics. We are committed to passing on to future generations a safer, more secure world.

Much integrated work remains to be done to achieve rigorous AMR surveillance in the agrifood chain. For its part, IICA will continue to assist the countries that need to develop their surveillance plans. The Institute is presently engaged in a second phase of work with the LAC countries, which could be described as the surveillance plan implementation phase. To that end, it is committed to supporting the efforts of government services to increase their laboratories' diagnostic capabilities, on farm interventions and communication techniques between different sectors, among other actions. The aim is to achieve a world in which AMR has been eliminated.

References

- Errecalde, JO. 2004. Uso de antimicrobianos en animales de consumo (on line). Rome, Italy, FAO. Consulted on 5 July 2019. Available at <http://www.fao.org/3/a-y5468s.pdf>.
- FAO (United Nations Food and Agriculture Organization, Italy). 2016. Technical document: Antimicrobial resistance: what you need to know (on line). Rome, Italy. Consulted on 5 July 2019. Available at <http://www.fao.org/zhc/detail-events/en/c/451065/>.
- FAO (United Nations Food and Agriculture Organization, Italy). 2019. Resistance to antimicrobial drugs (on line). Rome, Italy. Consulted on 5 July 2019. Available at <http://www.fao.org/antimicrobial-resistance/en/>.
- FAO and WHO. 2017. Steve Wearne talks AMR for Codex (on line). Rome, Italy. Consulted on 1 August 2019. Available at <http://www.fao.org/fao-who-codexalimentarius/news-and-events/news-details/en/c/1069766/>.
- FAO and WHO. 2019. Antimicrobial Resistance (on line). Rome, Italy. Consulted on 1 August 2019. Available at <http://www.fao.org/fao-who-codexalimentarius/thematic-areas/antimicrobial-resistance/en/>.
- IICA (Inter-American Institute for Cooperation on Agriculture). 2019. Infografía: Reducción del riesgo de resistencia a los antimicrobianos en los alimentos: desde la sensibilización hasta la vigilancia integrada. Consulted on 30 July 2019. San Jose, Costa Rica.
- IS Global (Instituto de Salud Global, Spain). 2016. Los 4 frentes de batalla contra la resistencia a los antibióticos (on line). Barcelona, Spain. Consulted on 30 July 2019. Available at <https://www.isglobal.org/informe-la-batalla-contra-las-resistencias>.
- IS Global (Instituto de Salud Global, Spain). 2017. Innovación y acceso: Resistencia a los antibióticos cuando el problema va más allá de las patentes (on line). Barcelona, Spain. Consulted on 30 July 2019. Available at <https://www.isglobal.org/documents/10179/5808947/Informe+Resistencia+Antimicrobiana+ES/a74ac65e-7d4b-4f18-8c3b-ec86778034ee>.

- IS Global (Instituto de Salud Global, Spain). 2019. Resistencias antimicrobianas: Contribuimos al conocimiento de las causas y factores de riesgo de las resistencias antimicrobianas, así como al desarrollo de nuevos medicamentos (on line). Barcelona, Spain. Consulted on 30 July 2019. Available at <https://www.isglobal.org/antimicrobial-resistance>.
- OIE (World Organisation for Animal Health, France). 2015. Fact sheet on antimicrobial resistance (on line). Paris, France. Consulted on 30 July 2019. Available at https://www.oie.int/fileadmin/Home/eng/Media_Center/docs/pdf/Fact_sheets/ANTIBIO_EN.pdf.
- OIE (World Organisation for Animal Health, France). 2019. About antimicrobial resistance (on line). Paris, France. Consulted on 30 July 2019. Available in <https://www.oie.int/en/for-the-media/amr/>.
- PAHO (Pan American Health Organization, Chile). 2016. Epidemiological alert: Enterobacteria with transferable colistin resistance, public health implications in the Americas (on line). Santiago, Chile. Consulted on 5 August 2019. Available at <https://www.paho.org/hq/dmdocuments/2016/2016-jun-10-cha-epi-alert-enterob-resist.pdf>.
- PAHO. Riviere-Cinnamond, A. 2019. Status of AMR policy implementation in the Latin American and Caribbean Regions. Santiago, Chile.
- WHO (World Health Organization, Switzerland). 2001. WHO Global Strategy for Containment of Antimicrobial Resistance. Geneva, Switzerland. Consulted on 30 July 2019. Available at https://www.who.int/drugresistance/WHO_Global_Strategy.htm/en/.
- WHO (World Health Organization, Switzerland). 2019. Antimicrobial resistance (on line). Geneva, Switzerland. Consulted on 5 August 2019. Available at <https://www.who.int/news-room/fact-sheets/detail/antimicrobial-resistance>.
- World Bank. 2016. By 2050, drug-resistant infections could cause global economic damage on par with 2008 financial crisis (on line). Washington, DC, the United States of America. Consulted on 1 August 2019. Available at <https://www.worldbank.org/en/news/press-release/2016/09/18/by-2050-drug-resistant-infections-could-cause-global-economic-damage-on-par-with-2008-financial-crisis>.



Inter-American Institute for Cooperation on Agriculture

Headquarters. P.O. Box 55-2200.

San José, Vázquez de Coronado, San Isidro 11101 - Costa Rica

Telephone: (+506) 2216 0222 • Fax: (+506) 2216 0233

E-mail: iicahq@iica.int • Web Site: www.iica.int