



Veterinary drugs and vaccinations are essential tools for maintaining animal health and ensuring food safety.

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VETERINARY DRUG RESIDUES AND AMR: HIDDEN CONNECTIONS AND A TOOL TO FIND THEM

Success story

The Food and Agriculture Organization of the United Nations (FAO) has been working on an assessment tool to help countries determine their capacity to test for residues of veterinary drugs in foods (RVDF) of animal origin. **“I am sure, 100 percent sure, that countries are getting tired of assessments and tools!”** says Masami Takeuchi, Food Safety Officer at FAO. However, the RVDF Tool she has been working on is a direct response to country requests for support in managing veterinary drug residues. **“I looked into**

it and often found this situation where anyone could get veterinary drugs,” she explains, **“and there were sometimes very lax controls on mitigating excessive residues.”** There are already numerous guidance documents developed by FAO that governments can consider regarding testing for residues. However, it soon became evident that a more practical, hands-on solution was needed. Takeuchi set about developing the RVDF Tool.

“Excessive residues” are defined internationally by maximum residue limits, or MRLs, set by the FAO/WHO Codex Alimentarius Commission. Abiding by these MRLs protects consumer health and facilitates fair practices in trade, and Takeuchi is clear that veterinary drugs are necessary. **“They are essential for our livestock production,”** she explains, **“but this is something that we must be careful about.”** Misuse, particularly of antimicrobials, poses serious risks. These include

not only drug residues in food but also the growing threat of antimicrobial resistance (AMR), which is rapidly undermining the efficacy of life-saving treatments, putting global public health at risk. **“Codex is really helping the situation,”** says Takeuchi, **“particularly for low- and middle-income countries, where developing risk-based national standards is a challenge - but monitoring of residues and documentation have not been sufficient.”**



Masami Takeuchi
Food Safety
Officer at FAO
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Monitoring of residues is a means of verifying the implementation and effectiveness of pre-harvest controls and practices and therefore can serve as important signals of practices when it come to the use of veterinary drugs. However, ascertaining that residue levels are below MRLs is only part of the solution to addressing food safety issues, and does not fundamentally contribute to effective AMR management. Resistance can develop from overuse but also from unnecessary or suboptimal use of antimicrobials. Thus, even when residues fall below Codex thresholds, quantifying the residue levels and documenting the drugs and attributed food commodities in the monitoring system are essential to provide evidence-based validation for responsible use of antimicrobials. Residue monitoring, then, must extend beyond basic compliance monitoring and help identify patterns of antimicrobial use (AMU), detect misuse, and trace environmental contamination.

Codex

“Codex” is the Codex Alimentarius, the collection of international food safety and quality standards, guidelines and codes of practice that include science-based maximum residue limits (MRLs) for veterinary drug and pesticide residues. These texts are developed in Codex committees and adopted by the Codex Alimentarius Commission.

Misuse and overuse of antimicrobials in food production is a key target of the FAO-implemented and Republic of Korea-funded Action to support implementation of Codex AMR texts (ACT) project. The ACT project promotes integrated monitoring and surveillance of AMR in food, in line with the set of three Codex AMR texts, greater awareness of foodborne AMR, and a robust regulatory framework in countries, to support these efforts. These three goals interlink, and they are all key to and supported by the new RVDF Tool.

WHAT IS THE RVDF TOOL?

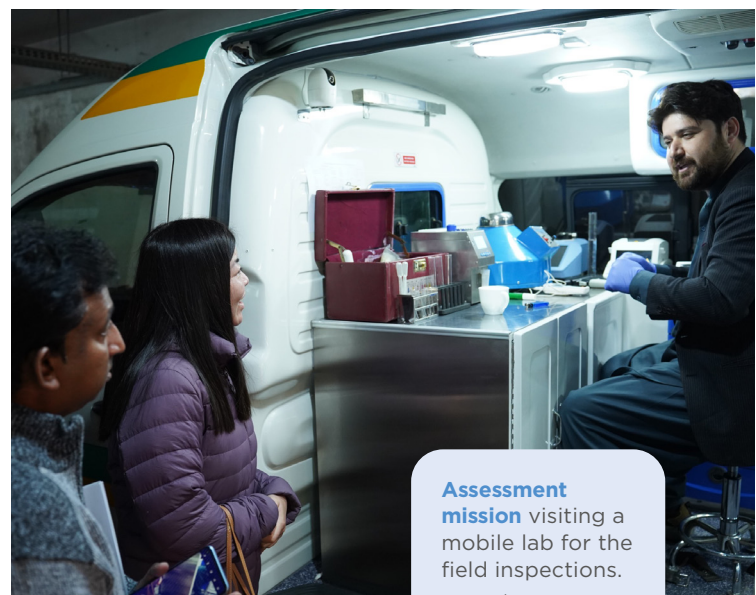
The RVDF Tool assesses, by means of a questionnaire, countries’ capacity to analyse and monitor residues of veterinary drugs, including antimicrobials, in foods. The Tool encourages respondents to consider strengthening their capacity to collect residue data relevant to AMR management, in addition to the core assessment on the basic compliance monitoring capacities for residues. **“People often tell us they don’t know where to start to fix residue issues.”** Takeuchi explains that often, the situation is more positive than countries think: **“Even as an expert, when going into countries to examine the national situation, I don’t know where to start. But then when we use the RVDF Tool, we see countries have more capacity than they thought.”**

Inspired by the structure of FAO’s Assessment Tool for Laboratories and AMR Surveillance Systems (FAO-ATLASS) tool for AMR surveillance, the RVDF Tool includes separate modules that can be used independently to evaluate national, university,

or private laboratories. This modular design allows countries to identify specific capacity gaps—even in the absence of a centralized monitoring infrastructure. The Tool has also been useful to donor countries, Takeuchi adds: **“the results allow donors to tailor their capacity building project for a specific country; the project can fill any capacity gaps.”**

GENERATING DATA, BUILDING AWARENESS, AND DRIVING CHANGE

For this nuanced issue to be “fixed”, though, there needs to be awareness. Takeuchi underlines that **“this assessment process is automatically raising awareness for people.”** There’s more to do, though, she admits: **“we need to do something about awareness raising at the highest level - above the ministry level - to see better allocation of money for possible shared laboratory capacities.”** Food safety is cross-cutting by default, and the need to analyse antimicrobial residues of in foods may come from different ministries or departments - health, agriculture, trade and standards - depending on the purposes and food commodities they deal with. Shared use of laboratories is promoted as a cost-effective and efficient approach to this issue.



Assessment mission visiting a mobile lab for the field inspections.
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The RVDF Tool offers much more than a snapshot of current capacity. It functions as a strategic enabler—supporting national AMR strategies and effective food safety management and control. The residue data generated can indicate which drugs are being used, their possible use—or misuse—and whether environmental contamination may be playing a role.

Recently the RVDF Tool was implemented in Pakistan under the ACT project. Through the RVDF assessment, they discovered that while laboratory infrastructure and qualified personnel existed, critical gaps remained in coordination, standard operating procedures, and data management. The assessment also triggered intersectoral dialogue among food safety authorities, veterinary services, aquaculture sector, trade-related authorities and academia. These discussions led to the development of a clear pathway for effective residue testing and monitoring efforts with Codex MRLs. **“This assessment provides valuable and actionable information for us, it helped us understand that our problem was not just lack of infrastructure—it was about connecting existing capacity with a clear strategy,”** said a national official.

This experience illustrates the Tool has a dual technical assessment and awareness-raising role. By engaging stakeholders across government, laboratories, and academia, the Tool fosters reflection on Codex standards, capacity gaps, and potential solutions.



Masami Takeuchi discusses details about institutions' strengths as a key for improvement.
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LOOKING AHEAD: A ONE HEALTH APPROACH

The success of the RVDF Tool lies in its alignment with the One Health approach. Addressing veterinary drug residues and AMR effectively requires coordinated action across food safety, animal health, environmental protection, and public health. The RVDF Tool encourages this multisectoral collaboration by supporting stakeholder mapping and engagement, helping countries develop integrated, sustainable solutions.

“Ultimately, the RVDF Tool is more than a technical instrument. It is a bridge linking data with evidence-based and informed decision-making, regulation with reality, and awareness with action. As AMR continues to threaten global health and food systems, tools like the RVDF Tool are essential to ensuring that countries can respond with knowledge, confidence, and coordination,” said Myoengsin Choi, ACT Project Coordinator.



Without effective disease control, animal health deteriorates. A systems approach helps ensure food safety.

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More information



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