CSE's initiative on NAP-AMR

**Strategic and Operational Guidance for
National Action Plan on Antimicrobial Resistance**
Focusing on animal and environment aspects

**National Workshop on Development of National Action Plan on
Antimicrobial Resistance**
December 8–9, 2016

Amit Khurana
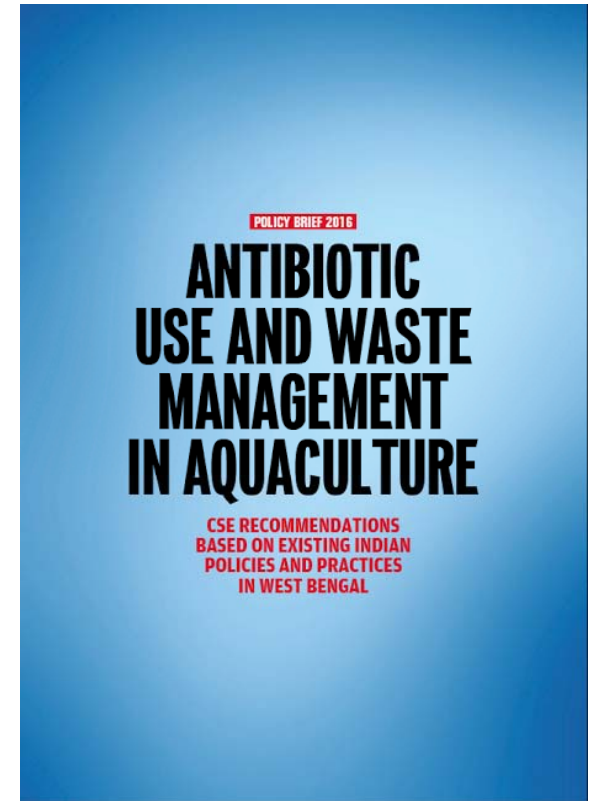Sr. Programme Manager
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CSE studies: Antibiotic use in food animals

2010

2014

Sept 2016

Residue tested by CSE's Pollution Monitoring Laboratory

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International Workshop on NAP on AMR for Developing Countries

INTERNATIONAL WORKSHOP ON NATIONAL ACTION PLAN ON ANTIMICROBIAL RESISTANCE FOR DEVELOPING COUNTRIES

India Habitat Centre
New Delhi
November 10–11, 2016
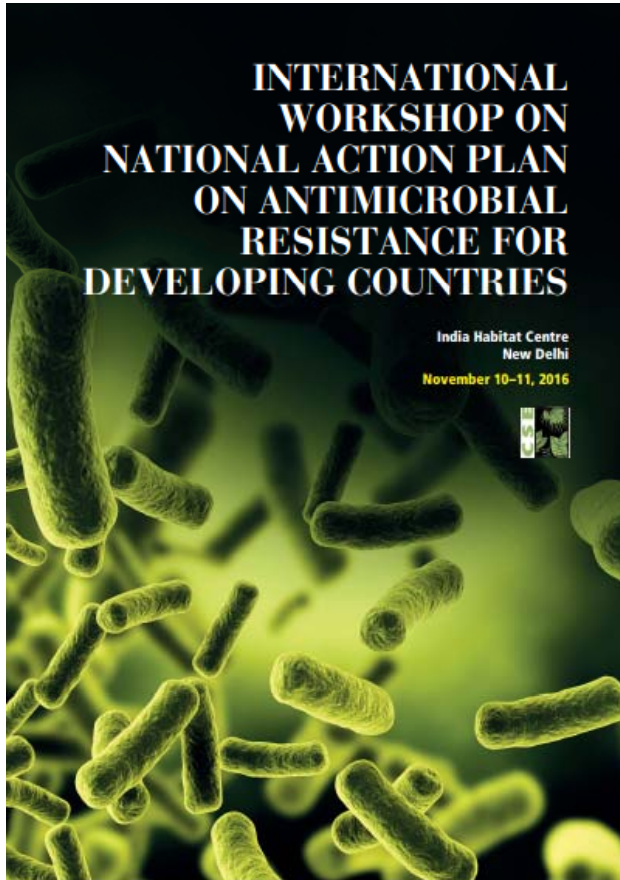
- The workshop brought together regional and national experts from governments, inter-governmental organisations, civil society as well as the scientific community from both human and veterinary sector

    - **Developed countries**: Denmark, Netherlands, Sweden, the UK

    - **Developing countries**: Bangladesh, India, Kenya, Philippines, South Africa, Sri Lanka, Thailand and Vietnam

    - **Global civil society organizations**: ReACT, Institute for Agriculture and Trade Policy, Third World Network

    - Representation from the **WHO** and **OIE** (from the regional level) and the **FAO** (from headquarter and regional level).

    - Sizable representation from stakeholder **Indian government departments** and **scientific institutions**

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Framework of Guidance on NAP-AMR

Responsible Antibiotic Use

Thematic areas			
Supply of antibiotics	Production Systems		Consumer
	Reduce need for antibiotics	Veterinarians and veterinary services	Farms and Farmers

Surveillance of Antibiotic Use and Antibiotic Resistance

Thematic areas			
Antibiotic use	Antibiotic resistance	Antibiotic residues	Environmental surveillance

Environment Management

Thematic areas			
Registration/ Licensing (based on environment risk assessment)	Biosecurity/Sanitation and Hygiene/Good Manufacturing Practices	Waste management	Research

Short-term **(S): <1 yr**; Medium-term **(M): 1-3 yrs**; Long term **(L): 3-5 yrs**; **(S-M-L): continues throughout**

INTERVENTION AREAS

- Policy/Law/ Regulations/ Standards/ Programmes
- Implementation tools- Infrastructure/ Capacity/Systems/ Resources
- Advocacy/ Awareness and Education/ Training/ Curriculum
- Record keeping/ Database generation/ Collation/ Dissemination and Research/Survey
- Review/Monitoring /Feedback

Responsible antibiotic use
Supply of antibiotics

Policy/Law/ Regulations/ Standards/ Programmes

- Assessment of existing laws and regulatory framework before formulation of new laws (S)

- National policy and regulatory framework on responsible antibiotic use with focus on (S):

  - Approval and authorisation of antibiotics for animals

  - Standard treatment guidelines for treating animals

  - Ban/phase off non-therapeutic use such as for mass disease prevention and growth promotion

  - Restricting use of critically important antibiotics for humans

  - Antibiotic use under supervision and prescription

  - Mitigating livelihood impact on small holder farmers

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Responsible antibiotic use
Supply of antibiotics

- Regulation to restrict antibiotics in animal feed and premix, registration of feed and premix, prescription and use of only registered products (S)

- Regulation on import of feed, feed premix and antibiotics for animal use (S)

- Labelling law for feed, premix (S)

- Labelling law for antibiotics for specie-specific use (S)

- Regulation on online marketing and direct distribution of antibiotics, premix, antibiotic feed or any other products with antibiotics (S)

- Law to ensure licensing of manufacturer, distributor and sellers of antibiotics, feed, premix and other inputs (S)

- Law to ensure prescription sale, including penalty for unauthorized sale (S)

- Plan to set reduction targets for antibiotic use by a certain date and with a review process (S)

Responsible antibiotic use
Supply of antibiotics

Implementation tools - Infrastructure/ Capacity/ Systems/ Resources

- Authority for approving veterinary drugs and market authorization (S)
- Systems to enable data collection of antibiotic production, sale and import (M)
- Necessary enforcement systems through agencies, customs, infrastructure, human resource including those required for auditing/inspecting companies providing inputs (e.g. feed), ensuring prescription sale etc.(M)

Advocacy/ Awareness and Education/ Training/ Curriculum

- Awareness and training of regulators, customs officials, distributers and sellers to ensure approved sale, documentation etc. (S-M-L)

Record keeping/ Database generation/ Collation/ Dissemination and Research/ Survey

- National online database of licensed antibiotic producer, importer, seller, defaulters (S)
- Online national/regional/sub-regional database on antibiotic production, sale, import (M)
- Online dissemination of updated policy, regulation and data including list of approved and unapproved antibiotics (S)
- Annual report of antibiotic sale correlated with consumption and resistance data (M)

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Responsible antibiotic use
Reduce need for antibiotics

Policy/Law/
Regulations/
Standards/
Programmes

- Develop guidelines for biosecurity (S)
  - Plan/programme for internal and external biosecurity and its enforcement
  - Programme to support small-holder farmers to implement biosecurity
- Programme to research, develop, promote access to alternatives such as vaccination, probiotics etc. (S)
- Plan for research and development of appropriate animal breeds (S)

Implementation
tools -
Infrastructure/
Capacity/
Systems/
Resources

- Develop systems to ensure adoption and implementation of appropriate biosecurity measures at the farm level (M)
- Systems to register antibiotic free alternative products and their use (S)
- Support to programmes on development and adoption of vaccines (M)
- Investment and research in development of appropriate animal breeds (M)

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Responsible antibiotic use
Reduce need for antibiotics

Advocacy/
Awareness
and Education/
Training/
Curriculum

- Awareness and training of farmers, registered practitioners, veterinarians and other stakeholders on need for biosecurity, judicious antibiotic use and importance of alternatives (S-M-L)

Record keeping/
Database
generation/
Collation/
Dissemination
and Research/
Survey

- National online database for approved and unapproved vaccines and other alternatives (S)

- A list/database/rating of farmers/producers successfully adopting biosecurity and using alternatives and not antibiotics (M)

Review/
Monitoring/
Feedback

- Periodic review of use and success of alternatives, with reference to antibiotic use and resistance data at the farm / sub-regional / regional / national level (S-M-L)

Responsible antibiotic use
Veterinarians and veterinary services

Policy/Law/ Regulations/ Standards/ Programmes

- Law for licensing / registration of veterinarians (S)
- Law to delink antibiotic prescription and incentives (S)
- Programme for accessible, affordable and quality diagnostic services to support judicious use of antibiotics (S)
- Programme for targeted, livestock specific veterinary services to provide free advisory services to farmers (M)

Implementation tools - Infrastructure/ Capacity/ Systems/ Resources

- Set up licensing authority for veterinarians and those involved in fisheries (S)
- Develop capacity and infrastructure to ensure veterinary diagnostic services (M)
- Develop system to dis-incentivize antibiotic prescription by veterinarian (S)

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Responsible antibiotic use
Veterinarians and veterinary services

Advocacy/
Awareness
and Education/
Training/
Curriculum

- Awareness, training and education of veterinarians (S-M-L)
- Necessary AMR focus in curriculum and continuous professional medical education (S-M-L)

Record keeping/
Database
generation/
Collation/
Dissemination
and Research/
Survey

- National online database of registered veterinarians, and those who prescribe more antibiotics and without testing (M)
- An updated list of diagnostic services available (S)

Review/
Monitoring/
Feedback

- Periodic monitoring of records at veterinary levels (S-M-L)

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Responsible antibiotic use

Farms and Farmers

Policy/Law/ Regulations/ Standards/ Programmes

- Law for licensing and monitoring of commercial farms and farmers based on country-level scenario) (M)
- Programme to incentivize/dis-incentivize farmers based on extent of antibiotic use (S)

Implementation tools - Infrastructure/ Capacity/ Systems/ Resources

- Set up licensing authority for farms and registration of farmers (S)
- Enabling system to dis-incentivize/incentivize antibiotic use at farm level (M)

Advocacy/ Awareness and Education/ Training/ Curriculum

- Targeted education on AMR and judicious antibiotic use for farmers (S-M-L)
- Farmer training in agro-ecological/alternative/participatory farming practices (S-M-L)

Record keeping/ Database generation/ Collation/ Dissemination and Research/ Survey

- National database of registered farms and farmers including those who are non-compliant or use more antibiotics (M)

Review/ Monitoring/ Feedback

- Periodic monitoring of records at farm levels (S-M-L)

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Responsible antibiotic use
Consumers

Policy/Law/ Regulations/ Standards/ Programmes

- Labelling law for food from animals produced with or without antibiotics (S)

Implementation tools -Infrastructure/ Capacity/ Systems/ Resources

- Systems to ensure compliance of labelling laws (S)

Advocacy/ Awareness and Education/ Training/ Curriculum

- Consumer awareness on antibiotics in food and AMR, labelling of food from animals raised without antibiotics and role of sustainable diets (S-M-L)
- Awareness and promotion of Institutional procurement of food raised without antibiotics (such as through a score card system used to incentivize/dis-incentivize food procurement) (S-M-L)

Record keeping/ Database generation/ Collation/ Dissemination and Research/ Survey

- Public database of farmers/producers raising farm animals without antibiotic use (M)
- Database of farmers/producers not in compliance to labelling laws (M)

Review/ Monitoring/ Feedback

- Periodic assessment of initiatives with those of antibiotic use data (S-M-L)

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Environment management
Registration/Licensing

Policy/Law/ Regulations/ Standards/ Programmes

- Policy on registration of farms, factories, slaughter houses, wet markets, processing units, feed manufacturers, health care facilities, veterinary care facilities (S)
- Siting guidelines and licensing for farms, factories, slaughter houses, wet markets, processing units, feed manufacturers, health care facilities, veterinary care facilities (S)
- Policy on environment risk assessment for registration and renewal of antibiotics for humans and animals (M)

Implementation tools - Infrastructure/ Capacity/ Systems/ Resources

- Regulatory system for enforcement of laws, ensuring compliance with adequate funding and capacity (M)
  - Small producers to be facilitated through required measures
- Tool for environmental risk assessment for siting, registration and renewal of antibiotics (S)

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Environment management
Registration/Licensing

Advocacy/ Awareness and Education/ Training/ Curriculum

- Sensitise regulators, industry and farmers (S)
  - Inclusion of environment management in antibiotics awareness week
- Build capacity of regulators (S)
- Development of customised material for awareness and training (S)

Record keeping/ Database generation/ Collation/ Dissemination and Research/ Survey

- Public database of licensed farms, factories, human and veterinary healthcare settings (S)

Review/ Monitoring/ Feedback

- Comprehensive review framework for policy/regulations and standards (S-M-L)

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Environment management
Biosecurity/Sanitation & Hygiene/Good Manufacturing Practices

Policy/Law/ Regulations/ Standards/ Programmes

- Development of guidelines, best practices for farms, factories, slaughter houses, wet market, health care facilities, veterinary care facilities (S)

Implementation tools -Infrastructure/ Capacity/ Systems/ Resources

- Regulatory system for enforcement of laws, ensuring compliance with adequate funding and capacity (M)
- Adopt progressive pathways to improve management (S-M-L)
- Develop incentives and disincentives for compliance including performance benchmarks and rating system (such as through pond and farm health cards) (S)

Advocacy/ Awareness and Education/ Training/ Curriculum

- Training and hand-holding on biosecurity (S)
- Sector-specific manuals and guidelines on progressive management pathways to improve environment management (M)
- Inclusion of biosecurity in farmer-field school curriculum or similar such approaches (S)

Record keeping/ Database generation/ Collation/ Dissemination and Research/ Survey

- Database on biosecurity compliance performance/ rating system (depending on local circumstances decision on public disclosure can be made) (M)

Review/ Monitoring/ Feedback

- Review of progressive pathways to improve biosecurity management (S-M-L)

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Environment management
Waste Management

Policy/Law/ Regulations/ Standards/ Programmes

- Standards for antibiotic residues in effluent and solid waste from industries, sewage treatment plants, farms, health care facilities, processing units, slaughter houses (S)
- Standards on microbial quality for effluent and solid waste discharge from farms, industry, meat processing, slaughter house, health-care facilities (S)
- Policy on Extended Producers Responsibility for expired antibiotics (S)

Implementation tools -Infrastructure/ Capacity/ Systems/ Resources

- Standard Operating Procedures (SOPs) on waste management for industries, sewage treatment plants, farms, health care facilities, processing units, slaughter houses, wet market, feed manufacturers (S)
- Regulatory system for enforcement of laws, ensuring compliance with adequate funding and capacity (M)

Advocacy/ Awareness and Education/ Training/ Curriculum

- Stakeholder training on waste management guidelines and SOPs (S)

Record keeping/ Database generation/ Collation/ Dissemination and Research/ Survey

- Online database on waste discharge quality, rating system, compliance/non-compliance (M)

Review/ Monitoring/ Feedback

- Development of success/failure indicators/milestones as part of review framework (M); Compliance status with review framework (S-M-L)

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Environment management
Research

- Assessment of situation/ knowledge on residues and AMR bacteria in effluents &wastes for policy making and regulations (S)
- Programme for developing and promoting innovation in environmental monitoring (S)

Implementation tools - Infrastructure/ Capacity/ Systems/ Resources

- Development and adoption of test protocols (S)
- Research on waste treatment technology wrt resistant bacteria, genes, APIs (S-M-L)
- Research on transmissions pathways of AMR among different environment compartments including human, animal and agriculture for prioritizing intervention (S-M-L)
- Cost-benefit analysis to assess socio-economic implications of antibiotics use (M)
- Documentation of best practices (M)

Environment management
Research

- Survey of existing knowledge, attitude and practice at ground level (S)
- Stimulation of international collaboration on research related to AMR (M)

Record keeping/
Database
generation/
Collation/
Dissemination
and Research/
Survey

- Centralised database on ongoing research/ research output (S)
- Sharing data on an international platform (for e.g., Global Environment Monitoring System) (S-M-L)

- Review of research agenda for future policy and practice (S-M-L)

Review of NAPs on Antimicrobial Resistance: need for greater environmental focus

• CSE reviewed the AMR NAPs of different countries with reference to the efforts to address environmental spread of AMR

• Review suggests that most countries
  • Underscore the importance of inspection, prevention and control, and bio-security
  • However. specific measures to tackle waste from pharmaceutical or food animal production settings is not common

• Environmental dimension gets greater mention in NAPs of developed countries.
  • Canada, US and UK outline need for research-based data to understand the mechanism and routes of environmental dissemination of AMR.
  • Switzerland underscores the need for monitoring antibiotics in farmyard manure, soil and water.
  • Netherlands stresses on monitoring manure and waste water from health facilities, treatment plants and residential areas.
  • Japan emphasizes on researching surveillance of resistant bacteria as well as residues in aquatic and terrestrial environment.
  • Sweden talks about controlling pharmaceutical waste

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Surveillance of antibiotic use and resistance
Antibiotic use

Policy/Law/ Regulations/ Standards/ Programmes

- Assessment of existing laws before formulation of new laws (S)
- Legal provision to obtain farm-level antibiotic use data (S)
- Regulation to ensure prescription audit of veterinarians/authorized practitioners (M)

Implementation tools - Infrastructure/ Capacity/ Systems/ Resources

- Systems to enable collection and collation of farm-level antibiotic use data (M):
  - Harmonized system for data collection and analysis
  - Ensure farmer's responsibility to provide data
  - Factor-in priority markets/sectors

Advocacy/ Awareness and Education/ Training/ Curriculum

- Awareness campaigns for farmers for self-policing and keeping records (S-M-L)
- Awareness campaigns for vets to prescribe antibiotics judiciously and keep records (S-M-L)
- Training programme on documentation for farmers and veterinarians (S)
- Training needs assessment of those conducting surveillance, development of training material etc. for data collection and management followed by enabling environment to collect data (S)
- Advocacy at community/ institutional level based on antibiotic use data reports
- (S-M-L)

Surveillance of antibiotic use and resistance
Antibiotic use

Record keeping/ Database generation/ Collation/ Dissemination and Research/ Survey

- Online systems for collating and analyzing prescription data and farmer use data. This should include antibiotics and classes, weight as unit, total antibiotic consumption in different food sector, therapeutic and non-therapeutic use (M)
- Surveys at farm level for data collection across different sectors (M)
- Setting up of data standards, ensuring the quality assurance of data (S)
- Establishment of national repository, publishing of annual reports and public dissemination of data to ensure transparency (M)

Review/ Monitoring/ Feedback

- Periodic review and mapping of data on antibiotic use, resistance and residue as part of integrated surveillance for continued advocacy, awareness and future policy and practice (S-M-L)

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Surveillance of antibiotic use and resistance
Antibiotic resistance

Policy/Law/ Regulations/ Standards/ Programmes

- National AMR surveillance programme to monitor resistance in animals and food from animals across all sectors (S)
- Law compelling farmers and food processors to provide samples for analysis and share their internal data on resistance (S)
- Establish ambitious and achievable resistance reduction targets (S)

Implementation tools - Infrastructure/ Capacity/ Systems/ Resources

- Commission an expert advisory group/steering committee to decide on key elements such as networking experts/labs, develop, terms of reference, priorities, linkages and international collaboration (S)
- Identify, establish and strengthen national reference laboratories who decide upon standards, protocols, organisms, data management mechanisms (M):
    - Ensure quality and harmonization with national/international data and establish linkages with resistance in humans and environment
    - Enable collaboration across labs to provide support, build access to WHO, FAO and OIE labs

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Surveillance of antibiotic use and resistance
Antibiotic resistance

Implementation tools - Infrastructure/ Capacity/ Systems/ Resources

- Develop and strengthen lab infrastructure, professional capacity, standardization of sample collection and testing protocols and assure quality both internally and externally through External Quality Assurance Scheme. (M) -sector specific; (L) - integrated quality assurance
- Ensure surveillance systems for harmonization across all sectors such as animal, human and environment. Integrated surveillance could begin with a pilot initiative (S-M-L)

Advocacy/ Awareness and Education/ Training/ Curriculum

- Awareness campaigns on importance and need of resistance surveillance across stakeholders (S-M-L)
- Training needs assessment for those conducting surveillance (S)
- Development of training material and protocols for resistance data collection and management followed by enabling environment for resistance surveillance (S)
- Capacity building and training programmes including integrated programs with the WHO,FAO,OIE collaborating centers (M)
- Advocacy at community and institutional level based on antibiotic resistance data reports (S-M-L)

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Surveillance of antibiotic use and resistance
Antibiotic resistance

Record keeping/ Database generation/ Collation/ Dissemination and Research/ Survey

- Data collection, collation and analysis at regional and sub-regional level from laboratories, food processors, imported food and those generated from surveys at farm-level (S-M-L)
- Correlation with antibiotic use and residue data (S-M-L)
- Development of an online integrated information system and publishing of annual reports and public dissemination of data to ensure transparency (M)
- Develop early warning system (S)

Review/ Monitoring/ Feedback

- Periodic review and mapping of data on antibiotic use, resistance and residue as part of integrated surveillance for continued advocacy, awareness and future policy and practice (S-M-L)

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Surveillance of antibiotic use and resistance
Antibiotic residues

Policy/Law/ Regulations/ Standards/ Programmes

- National antibiotic residue monitoring policy/programme in food from animals (S)
- Standards for antibiotic residues in food from animals such as chicken, eggs, milk, fish (S)

Implementation tools - Infrastructure/ Capacity/ Systems/ Resources

- Develop comprehensive residue monitoring framework which enables surveillance of approved and unapproved antibiotic use (S)
  - Export oriented residue monitoring framework could be considered for adaptation based on domestic antibiotic use
- Ensure availability of funds, infrastructure, resources for data collection (S)

Advocacy/ Awareness and Education/ Training/ Curriculum

- Awareness campaigns on importance and need of residue monitoring (S-M-L)
- Training needs assessment for those conducting surveillance (S)
- Development of training material and protocols for residue testing and data management followed by enabling environment (S)
- Capacity building and training programmes (M)
- Advocacy at community/institutional level based on antibiotic residue data reports (S-M-L)

Surveillance of antibiotic use and resistance
Antibiotic residues

Record keeping/ Database generation/ Collation/ Dissemination and Research/ Survey

- Data collection, collation and analysis at regional and sub-regional level from laboratories, food processors, imported food and those generated from surveys at farm-level (S-M-L)
- Correlation with antibiotic use and resistance data (S-M-L)
- Development of an online integrated information system and publishing of annual reports and public dissemination of data to ensure transparency (M)

Review/ Monitoring/ Feedback

- Periodic review and mapping of data on antibiotic use, resistance and residue as part of integrated surveillance for continued advocacy, awareness and future policy and practice (S-M-L)

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Surveillance of antibiotic use and resistance
Environmental surveillance

Policy/Law/ Regulations/ Standards/ Programmes

- National AMR surveillance programme to monitor resistance in environment (S)
- Regulation on antibiotic residues in effluent and waste from industries and farms (S)
- Standards for waste discharge from farms, slaughter houses, animal food processing industry, pharmaceutical industry and healthcare settings (S)

Implementation tools - Infrastructure/ Capacity/ Systems/ Resources

- Monitoring and surveillance framework including monitoring of antibiotic residues and AMR in indicator bacteria in environment, farms, factories, slaughter house, wet market, processing unit, health care facilities, vet care facility (prioritization based on ground realities) (M)
- Assess infrastructure needs, accordingly build/strengthen appropriate infrastructure and capacity (M)
- Develop systems to adapt, standardize, compare data across countries (M)

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Surveillance of antibiotic use and resistance
Environmental surveillance

Advocacy/ Awareness and Education/ Training/ Curriculum

- Awareness campaigns on importance and need of environmental surveillance across stakeholders (S-M-L)
- Training needs assessment for those conducting surveillance (S)
- Development of training material, protocols and data management (S)
- Capacity building and training programme (including at university level) (M)
- Training of peer/participatory monitoring systems (M)
- Advocacy at community/institutional level based on surveillance data reports (S-M-L)

Record keeping/ Database generation/ Collation/ Dissemination and Research/ Survey

- Data collection, collation and analysis at regional and sub-regional level (S-M-L)
  - Selection of sentinel sites to begin with
- Correlation with animal antibiotic use and AMR data (S-M-L)
- Development of an online integrated information system and publishing of annual reports and public dissemination of data to ensure transparency (M)
- Develop early warning system (S)

Review/ Monitoring/ Feedback

- Periodic review and mapping of data with antibiotic use and resistance in animal and human for continued advocacy, awareness and future policy and practice (S-M-L)

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Thank you!