Report

on

1) Recommendations for State Action Plans on Antimicrobial Resistance

2) Roadmap for Kerala to phase-out non-therapeutic antibiotic use and reduce use of critically important antibiotics (for humans) in poultry sector

based on deliberations in the

National Workshop on Development and Implementation of State Action Plan on Antimicrobial Resistance
June 10 – 11, 2019
Thiruvananthapuram, Kerala

organized jointly by

The Department of Health and Family Welfare, Kerala and
Centre for Science and Environment, Delhi

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Abbreviations

ABR	Antibiotic Resistance
AMR	Antimicrobial Resistance
AMU	Antimicrobial Use
APIC	Association for Professionals in Infection Control and Epidemiology
AR	Antibiotic Residue
ARG	Antibiotic Resistance Gene
AST	Antibiotic Susceptibility Test
CDSCO	Central Drugs Standard Control Organization
CIA	Critically Important Antibiotic
CLSI	Clinical and Laboratory Standards Institute
CSE	Centre for Science and Environment
ETP	Effluent Treatment Plant
FMD	Foot and Mouth Disease
HISI	Hospital Infection Society of India
HPCIA	Highest Priority Critically Important Antibiotic
IAP	Indian Academy of Pediatrics
IMA	Indian Medical Association
IPC	Infection Prevention and Control
IVRI	Indian Veterinary Research Institute
KARSAP	Kerala Antimicrobial Resistance Strategic Action Plan
NAP	National Action Plan
NCDC	National Centre for Disease Control
PCI	Pharmacy Council of India
SAP	State Action Plan
SPCB	State Pollution Control Board
SPF	Specific Pathogen Free
STG	Standard Treatment Guidelines
WHO	World Health Organization

Participants at the National Workshop on Development and Implementation of State Action Plan on Antimicrobial Resistance, Thiruvananthapuram, Kerala
June 10, 2019

Summary of deliberations

Antimicrobial Resistance (AMR) is a global health crisis of an unprecedented scale, which apart from huge health and economic loses, is expected to impact the attainment of several Sustainable Development Goals. AMR is estimated to globally claim more than 10 million lives per year by 2050 and result in global economic losses worth US $100 trillion. India is expected to be heavily impacted unless adequate measures are taken urgently. The key reasons for rising AMR include overuse and misuse of antibiotics in human health, food-animal production, agriculture along with poor waste management from households, farms, factories and healthcare settings.

Towards the objective of containing AMR in the country, India released its National Action Plan (NAP) on AMR in 2017, along with the Delhi Declaration on AMR. India's NAP-AMR calls for States and Union Territories to develop their own State Action Plans (SAPs) to facilitate greater action on the ground. In 2018, Kerala became the first Indian state to develop its own Kerala Antimicrobial Resistance Strategic Action Plan (KARSAP).The Centre for Science and Environment (CSE), a non-profit public interest research and advocacy organization, working on issues of public health, environment and development in India and global south, has been collaborating with the Department of Health and Family Welfare, Kerala to support implementation of the KARSAP.

As part of the collaboration, a Workshop on Development and Implementation of State Action Plan on Antimicrobial Resistance (AMR) was organized in Thiruvananthapuram on June 10-11, 2019. The workshop aimed at generating a better understanding on how to develop and implement a State's action plan on AMR through cross learning and inputs from Kerala's SAP-AMR development process. The workshop had two objectives:

- Develop recommendations for State Action Plans on Antimicrobial Resistance
- Develop a roadmap for Kerala to phase-out non-therapeutic antibiotic use (growth promotion and disease prevention) and reduce use of critically important antibiotics (CIAs) for humans in poultry sector

Day 1 of the workshop focused on SAP-AMR development and implementation. There were representations from across ten states of India namely Andhra Pradesh, Delhi, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Odisha, Tamil Nadu, Telangana and Uttar Pradesh. Participants included AMR focal points or senior level representatives from multiple departments such as health, animal husbandry, fisheries, food, drug, agriculture, and environment. In addition, experts from the Indian Medical Association (IMA), Indian Veterinary Research Institute (IVRI), National Centre for Disease Control (NCDC), Pharmacy Council of India (PCI) and ReAct also attended the workshop. The discussions apprised the participants about the AMR problem and related global and national policies to address it. Across three sectors (human health, food animals and crops, and waste and environment), key issues that were selected from Indian NAP-AMR for discussions are as follows:

Human health sector

- Over-the-counter sale of antibiotics
- Prescription practices
- Hospital infection prevention and control (IPC) practices
- Antimicrobial use (AMU) and AMR surveillance

Food animal and crop sector

- Non-therapeutic antibiotic use in food animals (growth promotion, disease prevention)
- Use of CIAs in food animals and crops
- Animal husbandry and biosecurity

- Surveillance of AMU, AMR and antibiotic residues (AR) in food

Waste and environment
- Waste management from different sources
- Environmental monitoring of AMR
- Siting guidelines and biosecurity
- Disposal of expired or unused drugs/antibiotics

Experts from states deliberated on above issues through presentations and open group discussions to develop practical guidance that could help achieve effective NAP implementation at the local level. Experts identified key policies, systems, tools, training and capacity building efforts needed for AMR containment across all sectors. In India, although health, animal husbandry, fisheries and pollution control are state subjects, and individual states can formulate decisive actions, only a few states have ramped up efforts to control AMR by developing an Action Plan. These plans guided by the World Health Organization (WHO) initially did the identification and analysis of the relevant stakeholders followed by the mapping of available infrastructure and capabilities of these stakeholders and institutions to arrive at a One Health action plan for control of AMR. Such state One Health action plan for AMR containment based on situational analysis like the KARSAP by Kerala serves as a model for other states.

Day 2 of the workshop focused on developing a roadmap for Kerala to phase-out non-therapeutic antibiotic use and reduce the use of CIAs (for humans) in poultry sector. Participants were largely from Kerala with few from other states. From Kerala, experts from Animal Husbandry Department, veterinarians, poultry consultants as well as doctors and fishery professionals engaged in discussions to agree on a roadmap under which antibiotics used for growth promotion and disease prevention were planned to be phased-out in 3-5 years. It was unanimously agreed to stop use of antibiotics in feed and ban last-resort antibiotics like colistin immediately.

The recommendations emerging from deliberations on both days of the workshop are summarized below.

Recommendations for State Action Plans on Antimicrobial Resistance

Table 1: Recommendations for human health sector

	Over-the-counter sale of antibiotics	Prescription practices	Infection prevention and control (IPC) in healthcare settings	Antimicrobial use and AMR surveillance
Policy/laws/ regulations/ standards	• Policy to display a list of schedule H1 drugs in all retail pharmacy outlets • Law to restrict/ban retail sale of oral formulations of linezolid, fosfomycin (CIA) and faropenem (HPCIA) • Revise list of schedule H1 drugs to include HPCIAs like colistin in view of AMR • Laws to ensure non-availability of substandard and pilferage drugs	• Develop Standard Prescription Guidelines • Policy for conducting prescription audits • Law to delink incentives associated with sale of antibiotics	• Develop an IPC policy in healthcare settings • Policy to accredit healthcare settings based on IPC • Develop standards for hand sanitizers • Develop a sanitation programme	• Develop an AMR surveillance programme along with necessary frameworks, policy guidance, baseline assessments etc. • Policy for obtaining manufacturer/producer data • Develop online system for drug traceability at state level and notify CDSCO's online tracking platform for regulating drug sales in the country
Implementation tools—infrastructure/ capacity/ systems/ resources	• Strengthen enforcement of Schedule H1 • Conduct periodic random checks to ensure Schedule H1 compliance • Strengthen capacity of state drug control departments for better enforcement • Strengthen implementation of laws to ensure non-availability of substandard drugs	• Enable regular circulation of Standard Treatment Guidelines (STGs) to healthcare professionals in public and private sectors • Revise STGs to include guidelines on "when not-to-use antibiotics"	• Ensure compliance to IPC policies/guidelines in healthcare settings • Digitalize IPC guidelines to enable greater access and readership • Enhance vaccination strategies for greater infection prevention	• Initiate an AMR surveillance network and implement surveillance • Initiate collaborations with private institutions to acquire community data • Establish/upgrade laboratories for AMR surveillance • Ensure generation of quality data from different labs across the country
Awareness and education/ training	• Increase awareness on AMR and optimal use of antimicrobials • Revise pharmacy and medical education curricula regulation to include AMR	• Sensitize healthcare professionals on judicious use of antibiotics, AWaRe categorization of antimicrobials and other relevant resources • Revise pharmacy and	• Increase awareness on IPC through hand-washing campaigns, Kayakalp initiative etc. • Involve professional organizations such as IMA,HISI, IAP, APIC for development of	• Strengthen laboratory based competence and capacity w.r.t. AMR surveillance • Impart training on areas related to AMR surveillance such as WHO-NET etc.

	Over-the-counter sale of antibiotics	Prescription practices	Infection prevention and control (IPC) in healthcare settings	Antimicrobial use and AMR surveillance
		medical education curricula w.r.t. judicious antibiotic use and antibiotic prescription practices • Provide orientation classes for medical students (2nd year) on prescription practices	guideline/ certification courses/classroom or practical courses on IPC • Conduct training programmes for link nurses on IPC • Revise pharmacy and medical curricula about IPC • Provide orientation classes for medical students (2nd year) on IPC • Incorporate AMR education in curriculum and develop continuing education /training programmes related to AMR for professionals in veterinary medicine, fisheries and agriculture	
Database generation/ collation/ dissemination		• Push for localized studies or research based projects aimed to generate data on antibiotic prescription practices • Collate data on antibiotic prescription practices, and make it publically available		• Collate AMR surveillance data from healthcare settings across surveillance networks and make it publically available

Table 2: Recommendations for food animals and crop sector

	Non-therapeutic antibiotic use and use of CIAs (for humans) in animals	Good animal husbandry practices	Surveillance of AMR, AMU and antibiotic residues in food	Infection prevention and control, biosecurity
Policy/laws/ regulations/ standards	• Develop a roadmap, based on ground realities, to phase-out routine and non-therapeutic antibiotic use and use of CIAs in food-animal production • Phase-out all HPCIA for non-therapeutic use in short term (0-1 year), CIA for non-therapeutic use in medium term (2-5 years) • Regulations/guidelines to restrict the use of antibiotics in feed or feed supplements • Labeling laws for antibiotics used in animal feeds and feed supplements • Law to enable veterinarians to enter, inspect and audit integrated/commercial farms <u>Alternatives</u> • Modify the Indian Veterinary Council Act to allow use of alternative therapies, disallow quack practices	• Minimum standards of education for fisheries professionals	• Law to designate a separate Drugs Controller for veterinary drugs • Law to regulate online sale and pilferage of antibiotics for veterinary use • Law to ensure sale of veterinary antibiotics strictly on prescription	• Develop a disinfection policy for animal husbandry • Standards for inlet pond water and disinfection in aquaculture • Law for registration and licensing of all farms • Scheduled vaccination in animals to be made mandatory across all states
Implementation tools—infrastructure/ capacity/ systems/ resources	• Run pilot/demonstration projects in few farms to implement farming practices with no antibiotic use, better farm and waste management • Encourage judicious use of antibiotics for therapeutic purposes strictly under veterinary supervision; no routine use of antibiotics in the absence of medical supervision	• Ensure stronger implementation of existing guidelines and policies such as Livestock Policy, Poultry Farm Manual. • De-link the influence of feed supplier/drug supplier on farmers • Develop and promote rating of farms based on compliance to good	• Increase capacity of drug regulators to ensure better regulatory compliance • Upgrade laboratories for AMR and antibiotic residue surveillance • Upgrade microbiology and analytical capacity in district-level laboratories for AMR and antibiotic residue surveillance • Strengthen implementation of	• Issuance of pond health cards to aquaculture farmers based on healthy water parameters in the farm • Strengthen vaccination programmes • Ensure farmers' compliance to good farming practices, internal/external biosecurity and better waste

	Non-therapeutic antibiotic use and use of CIAs (for humans) in animals	Good animal husbandry practices	Surveillance of AMR, AMU and antibiotic residues in food	Infection prevention and control, biosecurity
	should be allowed <u>Alternatives</u> • Gradually adopt use of alternative over antibiotics • Promote alternatives such as disinfectants, ethno-veterinary medicines as well as point-of-care diagnostics etc.	animal farming, antibiotic use and waste management practices • Incentivize farmers for compliance to good farming and waste management practices, no antibiotic use and adoption of alternatives • Certification of farms/hatcheries that raise food animals with judicious use of antibiotics or no antibiotic use • Increase number of veterinarians for improved farmer to veterinarian ratio	laws to ensure non-availability of substandard and pilferage drugs	management practices • Adopt better broodstock management practices in aquaculture • Strengthen existing vaccination programmes • Promote the use of vaccines, antioxidants, immunostimulants (poultry sector), encourage clean milk production and vaccination against FMD (dairy sector), encourage use of SPF seed, bioflock technology (aquaculture sector)
Awareness and education/ training	• Improve farmers' awareness about farm health and impact of antibiotic misuse/use in animals • Ensure understanding of patho-physiology of the disease in animals before prescription • Improve farmers' awareness about availability and use of alternatives to antibiotics in food-animal production	• Improve farmers' awareness about good farming and waste management practices	• Improve farmers' awareness about biosecurity, IPC in farms, good farming and waste management practices • Modify veterinary curriculum to enable sector-specific training at post graduate level e.g. poultry, fishery, dairy, etc.	• Improve farmers' awareness about good farming and better waste management practices
Database generation/ collation/ dissemination			Collate AMR, AMU and AR surveillance data and make it publically available	

Table 3: Recommendations for waste and environment sector

	Waste management from different sources	Environmental monitoring of AMR and antibiotic residues	Siting guidelines and biosecurity	Disposal of unused or expired drugs
Policy/laws/ regulations/ standards	• Set standards for antibiotic residues for waste/effluent from all point sources • Regulation to ban use of poultry litter in aquaculture	• Develop a plan for AMR surveillance in environment • Integrate environmental AMR surveillance plan with existing environmental monitoring programmes such as National Water Monitoring Programme	• Develop siting guidelines for all farms	• Regulation to prevent disposal of unused or expired drugs/antibiotics with solid waste • Guidelines on how to dispose expired or unused drugs/antibiotics in hospital settings
Implementation tools—infrastructure/ capacity/ systems/ resources	• Design/upgrade Effluent Treatment Plants (ETPs) with technology that addresses AMR determinants in effluent	• Consider all point and non-point sources for surveillance of AMR and antibiotic residues in environmental samples • Build microbiological and analytical capacity of State Pollution Control Board (SPCB) laboratories for AMR surveillance		• Initiate drug/antibiotic take-back programmes for unused or expired drugs/antibiotics* • Association of drug/antibiotic manufacturing companies to take back expired drugs/antibiotics
Awareness and education/ training	• Create awareness about environmental AMR			
Database generation/ collation/ dissemination				• Mandate maintaining records of volume of antibiotics produced, sold and used, and make them publically available

* Kerala's ongoing drug-take back initiative - PROUD (Programme for Removal of Unused Drugs) could be referred and adopted by other states

Roadmap for Kerala to phase-out non-therapeutic antibiotic use and reduce use of CIAs for humans in poultry sector

The roadmap for phase-out of non-therapeutic antibiotic use (growth promotion and disease prevention) and reducing use of CIAs (for humans) in poultry sector in Kerala is given in Table 4. Experts discussed that non-therapeutic antibiotic use in Kerala was largely prophylactic in nature (disease prevention) as farmers use it to prevent mortality, which simultaneously may also contribute to growth promotion as well. Antimicrobial agents should not be supplied to compensate for overcrowding, poor sanitation or housing, management or nutrition, except for short term treatment with animal welfare considerations. It was agreed that in short term (0-1 year), use of colistin, a highest priority CIA, would be prohibited from use in both therapeutic and non-therapeutic forms. Along with this, use of all antibiotics in feed would also be phased-out in short term. In the medium-long term (2-5 years), all antibiotics in feed as well as water should be phased-out. In parallel, the phase-out process however needed to be supplemented by chemical and non-chemical alternatives, and better farm and waste management practices. Experts also recommended that the government has an important role to play in supporting this phase-out through regulations, programmes, necessary awareness and training.

Table 4: Roadmap for phase-out of non-therapeutic antibiotic use in poultry sector in Kerala.

	Timeline for phase-out	**Antibiotics to be phased-out (along with route of administration)**	**Chemical alternatives that could support the phase-out**	**Non-chemical alternatives to support the phase-out**	**Farm and waste management practices to support the phase-out**
Non-therapeutic antibiotic use	Short term (0-1 year)	Colistin for all use*	<u>Disinfectants</u> • Regular use of disinfectants such as gluteraldehyde, iodine compounds, slaked lime preparations, organic acids, quaternary ammonium compounds, etc. to disinfect farm and poultry litter • Regular use of water sanitizer and treatment of water pipelines with hydrogen peroxide to ensure clean water supply in farms	<u>Vaccines</u> • Strengthen vaccination programmes • Research on better vaccines for bacterial infections of poultry <u>Alternatives</u> • Use of alternatives such as phytochemicals, bacteriophages, herbal preparations, probiotics and prebiotics, in place of antibiotics • Research and promotion of ethno-veterinary medicines	<u>Better farming practices</u> • Continued veterinary supervision to manage infection burden • Adoption of biosecurity measures • Improved personal hygiene among farmers as well as farm hygiene and sanitation through clean feed or water supply • Ensure farms are located as per siting guidelines <u>Better waste management</u> • Disinfection and incineration of farm waste • Prevent use of poultry litter in aquaculture farms or as manure in agricultural fields
	Short term (0-1 year)	All antibiotics in feed			
	Medium-long Term (2-5 years)	All antibiotics in water			

*Therapeutic as well as non-therapeutic use

Government initiatives required to support phase-out

- Programmes to raise farmers' and policy makers' awareness about impacts of misusing antibiotics on health of farmers, consumers, animals and the environment
- Programmes to raise consumers' awareness about AMR, ARGs and ARs, and to raise consumer demand for antibiotic-free chicken or food which will likely create more push to address AMR
- Government-structured antibiotic stewardship programmes, and schemes to incentivize farmers to adopt better farming practices, to follow withdrawal period when using antibiotics for treatment and to rate farms based on compliance to hygiene and biosecurity
- Government programmes to ensure improved availability of cost effective, rapid disease diagnostic kits to ensure timely diagnosis of diseases and prevent the outbreak of infections
- Government sponsored schemes to supply alternatives such as phytochemicals, bacteriophages, probiotics and prebiotics to farmers
- Certification programmes for organic/scientifically/ethically produced chicken to boost consumer awareness and demand for poultry raised without antibiotics
- Government-led periodic inspection drives to check antibiotic misuse/use practices on farms
- Provision for registration and licensing of all farms including integrated farms and for registration of poultry brought from cross border territories
- Regulation to mandate sale of veterinary drugs strictly on prescription by a registered veterinarian, to disallow mixing feed with antibiotics and to monitor feed coming through cross-border territories
- Regulation to ban use of poultry litter for use aquaculture and application of litter as manure to contain cross-sector spread of AMR
- Strengthen implementation of regulation to prevent over-the-counter sale of antibiotics for humans for use in poultry and pilferage of expired drugs from human sector for use in animal feed
- Enhance district level laboratory infrastructure, particularly in poultry production hubs in Kerala
- Establish/upgrade laboratories and veterinary clinics for disease diagnosis, treatment, testing antibiotic susceptibility, water quality testing etc.
- Higher allocation of funds and resources for veterinarians to reach individual farmers and for drug control department to inspect quality of drugs
- Training of farmers to adopt better farming practices and to help them interpret information provided on feed labels to enable them to demarcate between antibiotic premixed and organic feed
- Follow-up programmes for trained farmers to ensure compliance to good farming methods

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