

# The current state of AMR research activities including Alternative to antimicrobials (ATA) and collaboration opportunities in Nepal.

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## Background on AMR research in the Nepal

Antimicrobial resistance (AMR) surveillance began in Nepal in 1999 by the National Public Health Laboratory (NPHL) as a focal point for AMR surveillance and AMR surveillance in animals in Nepal began in 2011. The government laboratories, NPHL and veterinary laboratories, work together to monitor AMR in animal pathogens. Central Veterinary Laboratory (CVL), National Avian Disease Investigation Laboratory (NADIL) and Veterinary Laboratories (VLs) are the key players for AMR surveillance in animal pathogens. Also, the research units in academia (Agriculture and Forestry University/ Tribhuvan University (TU)) and Nepal Agricultural Research Centre (NARC) are involved in research related works.

## ATA Research Focus

Alternatives to antibiotics such as acidifiers, prebiotics, probiotics, phytobiotics, vaccines etc. has been extensively used in poultry production in Nepal. Since, Government of Nepal has banned in use of antibiotics in feeds of animals, use of such alternatives to antibiotics has been increased tremendously. Research on ATA in Nepal is still in an early stage. However, there is growing research interest in phytotherapy, probiotics, bacteriophages, herbal medicines and other novel approaches. There are no any regulatory barriers to developing ATA based treatment. However, there are some non technical barriers such as delays and bottlenecks in registration and approval, resistance from traditional veterinary practitioners, difficulty in field trials to test the effectiveness of ATA.

## Challenges related to AMR/ATA research

- Standard protocols for AMR research has not been approved (except AMR on poultry pathogens).
- Challenges in testing and validation.
- Inadequate skilled human resources.
- Less budget in research and research is under NARC.
- Regulatory barriers include lack of clarity, delays in registration, approval and action.
- Limited coordination between stakeholders.

## Solutions

- Use One health platforms to set priority across sectors.
- Preparation of SOPs.
- Strengthen and expand the existing surveillance systems.
- Establish National AMR Surveillance Center.
- Enhance capacity of laboratories and monitoring
- Develop national protocols for infectious disease control and monitor its compliance.
- Reduce the incidence of infection through prevention and control measures.
- Promote further operational research and encourage innovations
- Promote ATA as a growth promoters and disease prevention.

## Collaboration opportunities

AMR research has been conducted with the support from Food and Agriculture Organization (FAO) and Fleming Fund (country grant). World Organization for Animal Health (WOAH) has been providing technical assistance and International Atomic Energy Agency has been providing laboratory equipment and reagents, time and again. Similarly, we frequently share information and involved in common training platform with NPHL for better understanding in public health pathogens and its AMR situation. At present, there are no any collaborations with any organizations in the area of ATA.