

## Meeting report



# India–UK AMR Network Meeting 2026: One Health perspectives on environmental, clinical, and behavioral drivers of antimicrobial resistance



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## Meeting report

# India–UK AMR Network Meeting 2026: One Health perspectives on environmental, clinical, and behavioral drivers of antimicrobial resistance

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## Abstract

Antimicrobial resistance (AMR) poses a critical threat to global health, food security, and economic development. India is a major hotspot for AMR emergence, driven by high consumption of antimicrobials, often unregulated or used without a prescription. Recognizing this challenge, the India–UK AMR Network Meeting was jointly convened by the University of Leeds, UK, and SRM University-AP, India, to develop a multidisciplinary research network that focuses on integrated perspectives across human health, veterinary sciences, environmental microbiology, social medicine, and bioinformatics within a One Health framework. The meeting was held from January 21 to 23, 2026, at SRM University-AP, Andhra Pradesh, India. This network meeting brought together interdisciplinary experts from India and the United Kingdom to establish this collaborative framework. Key discussions addressed AMR surveillance strategies at the community level across themes such as human, animal, and environmental health. Topics included mechanisms such as cross-resistance versus co-resistance; human-to-pet transmission of AMR; seasonal and anthropogenic drivers of AMR; alternative interventions, including bacteriophages; and socio-behavioral determinants influencing antimicrobial misuse. This report summarizes the scientific deliberations and emerging research priorities identified during the meeting and highlights the urgent need for integrated, collaborative AMR surveillance across sectors and geographical regions, beginning with strengthened partnerships between India and the United Kingdom.

**Keywords:** Antimicrobial resistance, Community engagement, Cross-sectoral integration, One Health approach, Public health

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## Introduction

Antibiotics are crucial for treating infections, but their widespread and often unregulated use has contributed to a global health crisis: antibiotic resistance. This happens when bacteria develop resistance to antibiotics, making infections increasingly difficult to treat. While most research on antibiotic resistance focuses on hospitalized patients or individuals with chronic illnesses, relatively little is known about the impact of antibiotic use in otherwise healthy populations [1]. This gap is concerning, as healthy individuals can harbor resistant bacteria and act as a silent reservoir of AMR [2], particularly when prescribed antibiotic courses are not completed.

To address this gap, SRM University-AP, India, and the University of Leeds, UK, aimed to establish a collaborative research network across different regions of India to conduct a pilot study exploring antibiotic use in generally healthy populations and its contribution to antimicrobial resistance, supported by an Academy of Medical Sciences networking grant. For this purpose, a meeting was proposed to understand how environmental and lifestyle factors influence AMR, bringing together a network of researchers and institutions from India and the UK. The aim was to strengthen the generation of region-specific data and to identify patterns in antibiotic consumption and resistance among healthy individuals, particularly within low-income communities.

By facilitating the exchange of knowledge, this collaborative network brought together experts across microbiology, molecular biology, environmental sciences, veterinary sciences, public health, and biomedical research, highlighting a multidisciplinary One Health approach to understanding antimicrobial resistance. The meeting also aimed to strengthen opportunities for future grant applications to support larger-scale studies in India, including expanded sampling, multi-site investigations, and the integration of molecular, clinical, and environmental research components. The outcome of the network meeting will help guide public health strategies to promote responsible antibiotic use and to combat the growing threat of AMR. This was the first network meeting of its kind, designed to foster long-term collaborations enabling effective, region-specific AMR prevention strategies through integrated molecular, clinical, and environmental research, with a focus on both human and livestock health.

## Meeting overview and organization

The meeting was held from 21<sup>st</sup> to 23<sup>rd</sup> January, 2026, at SRM University-AP, Andhra Pradesh, India, with an open online interaction on 22<sup>nd</sup> January, 2026. The meeting was jointly convened by Prof. Jayaseelan Murugaiyan, Associate Dean - School of Engineering and Applied Sciences (SEAS) & Head of the Department, Biological Sciences, SEAS, SRM University-AP, India, and Dr Suparna Mitra, Lecturer in Bioinformatics (Microbiomics), Faculty of Medicine and Health, University of Leeds, UK, and was funded by the Academy of Medical Sciences. Experts from academic, clinical, veterinary, and environmental institutions across India and the UK participated, as mentioned in Table 1. The program schedule is provided at the end of the report.

## Program schedule

The scientific program commenced with opening remarks by Prof. Jayaseelan Murugaiyan and Dr. Suparna Mitra, who outlined the objectives, structure, and expected outcomes of the meeting, followed by brief introductions by the participating experts. The program was conducted over three days, comprising an initial ice-breaking and networking session on Day 1, followed by focused scientific discussions on Day 2 and collaborative proposal development on Day 3. Day 2 featured thematic breakout sessions broadly covering environmental resistome profiling, gut microbiome and diet, modeling and bioinformatics, chemical and contaminant drivers, and policy and community engagement, with both in-person and online participation. The meeting concluded with joint discussions to explore opportunities for joint research initiatives, develop collaborative proposals, and formulate action plans to strengthen India–UK collaboration and efforts in antimicrobial resistance research.

## Key scientific themes and discussions

Discussions during the meeting were structured into various themes under the One Health Framework, with Data Science, Bioinformatics & Surveillance (Monitoring) served as a common theme.

The themes are as mentioned below:

- |                                          |                                          |
|------------------------------------------|------------------------------------------|
| I. Human Health (Medical / Microbiology) | IV. Pharmacy / AMR                       |
| II. Animal Health                        | V. Lifestyle, Food & Microbiome          |
| III. Environmental Factors               | VI. Public Health - Community Engagement |

**Table 1:** Experts and institutional affiliations.

| Speaker                                          | Affiliation                                                                         | Expertise area                                     |
|--------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------|
| Dr. Abhrajyoti Ghosh                             | Bose Institute, India                                                               | Microbial stress response and adaptation           |
| Dr. Ashwani Kumar Thakur<br>(online interaction) | IIT Kanpur                                                                          | Biopharmaceuticals and material design             |
| Dr. Asifa Qureshi<br>(online interaction)        | CSIR-NEERI, Nagpur, India                                                           | Microbiology                                       |
| Dr. Chandra Sekhar Suppala                       | Veterinary practitioner,<br>Andhra Pradesh                                          | Veterinary science                                 |
| Dr. Jayaseelan Murugaiyan                        | SRM University-AP, India                                                            | AMR and proteomics                                 |
| Dr. Krupali Patel                                | O.P. Jindal Global University,<br>Sonapat, India                                    | AMR and public Health                              |
| Dr. Mahua Das                                    | University of Leeds, UK                                                             | Global health, community-based monitoring          |
| Dr. Manikandan Madheslu                          | Sri Krishna Arts and Science College,<br>Coimbatore, India                          | Molecular taxonomy and natural products            |
| Dr. Mayilvahanan Bose                            | Cancer Institute (WIA),<br>Chennai, India                                           | Molecular oncology                                 |
| Dr. P. Anand Kumar                               | NTR College of Veterinary Science,<br>Sri Venkateswara Veterinary University, India | Veterinary microbiology                            |
| Dr. Prasun Goswami                               | SRM University-AP, India                                                            | Environmental engineering                          |
| Dr. Rajib Dasgupta                               | Jawaharlal Nehru University,<br>New Delhi, India                                    | Epidemiology, nutrition, vaccines,<br>urban health |
| Dr. S. Shobana                                   | SRM-IST, Chennai, India                                                             | Phage and computational biology                    |
| Dr. Saravanan Matheshwaran                       | IIT Kanpur, India                                                                   | Microbiology, DNA repair and stress biology        |
| Dr. Somasi Dam                                   | University of Burdwan,<br>West Bengal, India                                        | Molecular microbiology                             |
| Dr. Suparna Mitra                                | University of Leeds, UK                                                             | Metagenomics and microbiomics                      |
| Dr. Zhumur Ghosh                                 | Bose Institute, Kolkata, India                                                      | Regulatory RNA and stem cells                      |

The discussion primarily focused on surveillance of human and zoonotic pathogens, alongside the integration of clinical microbiology data to understand AMR trends, their impact on disease patterns, and improve treatment strategies, thereby minimizing unwarranted antimicrobial use. Monitoring animal populations, livestock, and associated individuals and communities is also critical for raising awareness about AMR and preventing cross-species transmission of resistance [3, 4, 5]. Another critical priority is the surveillance of environmental reservoirs, including water, soil, and waste, which contribute to pathogen persistence and the emergence and spread of AMR [6, 7]. Investigating the interactions between diet, the microbiome, and host health, including endocrine regulation, will further provide insights into susceptibility to AMR.

During the meeting, experts also highlighted the socio-economic and behavioral drivers of antimicrobial misuse and overuse, such as self-medication, over-the-counter antibiotic sales, and limited public awareness. Consequently, the integration of community engagement, awareness-building, and collection of behavioral data was proposed as an essential component of AMR research, supporting more effective surveillance and strategies to prevent inappropriate antimicrobial use.

Discussions among experts also highlighted prior and preliminary targets achieved through a comparative study of antimicrobial use and resistance in apparently healthy populations in low-income communities in Burdwan (West Bengal). Building on this work, the study aims to expand community engagement and awareness of AMR across India, with Coimbatore (Tamil Nadu) and Vijayawada (Andhra Pradesh) as the next study sites. These efforts will particularly focus on slum communities, including heterogeneous and mobile populations, where limited literacy and awareness often contribute to antibiotic misuse, including inappropriate dosing and use without proper indication.

An emerging and relatively underexplored topic discussed was human-to-pet transmission of resistant pathogens, highlighting the bidirectional transmission dynamics between humans and companion animals. Additionally, the



seasonal and climatic variations in infection emergence and prevalence, as well as associated AMR patterns, were discussed. These dynamics were shown to be strongly influenced by anthropogenic factors, including agricultural antibiotic use, wastewater discharge, urbanization, and associated environmental pollution [8, 9].

Furthermore, the importance of alternative strategies to mitigate antibiotic overuse, particularly bacteriophage therapy, was discussed. These approaches may also include combination therapies, targeting resistance-associated enzymes and proteins, novel drug delivery systems, and physicochemical interventions, which provide promising potential to manage multidrug-resistant pathogens in clinical settings [10]. Biodegradable nanoparticles are used as antimicrobial agents against foodborne pathogens [11]; similar strategies may be used for other Gram-negative bacterial infections. Widespread AMR across the globe also highlights the need to develop and use rapid diagnostic tools for real-time detection, thereby curbing associated biofilm formation.

### Scientific outcomes and perspectives

The workshop fostered interdisciplinary discussions, enabling experts to brainstorm next steps, share research insights, and explore ways to expand the project's scope. This collaborative effort contributed to the development of a comprehensive strategy for targeted AMR research across different regions in India, ensuring impactful, data-driven outcomes. Based on these discussions, the following ideas/plans were proposed as outcomes of this network meeting.

- a. To incorporate wastewater sampling in the target communities to assess environmental AMR.
- b. Collection of samples from waste bins to evaluate potential household AMR dissemination.
- c. Inclusion of rectal swabs from livestock to investigate zoonotic transmission risks.
- d. Collection of human urine samples to monitor clinically relevant AMR pathogens.
- e. To engage with the community in a participatory way to understand the community needs, existing behavior and knowledge on antimicrobial use, and promote responsible and rational use of antimicrobials.
- f. Inclusion of household pets to assess human-to-pet AMR transmission.
- g. "To conduct" point-prevalence surveys to generate epidemiological data on AMR burden/distribution.
- h. Analyzing bird droppings integrated with metagenomic analyses to explore AMR reservoirs.

Additionally, the India–UK AMR Network Meeting aims to establish a multi-institutional research consortium focusing on capacity building through MoU(s) between the University of Leeds, UK, and associated universities/institutes in India, facilitating student exchange programs, joint research grants, publications, and shared bioinformatics infrastructure. Furthermore, general meetings with all collaborators will be held online to promote sustainability and enable real-time collaboration and prompt decision-making.

### Concluding remarks

Citing the complexity of AMR, this meeting emphasized the need for collaborative, cross-sectoral approaches and developed a solution by integrating expertise from the molecular, environmental, clinical, and social sciences. The meeting successfully established a multidisciplinary platform to address AMR through a One Health framework. The outcomes of this meeting laid the foundation for a sustained India–UK research partnership to generate ideas and a way forward to mitigate AMR.

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**India-UK AMR Network Meeting 2026****21<sup>st</sup> - 23<sup>rd</sup> Jan, 2026****DAY 1 - Ice-breaking session****Date:** 21-01-2026**Location:** ALC-1**Duration:** 11:30 - 17:30

| <b>Time (IST)</b> | <b>Program</b>                      | <b>Details</b>                                                                                  |
|-------------------|-------------------------------------|-------------------------------------------------------------------------------------------------|
| 11:30             | Registration                        | Registration kit (bag, schedule, notepad, pen, ID card) distribution                            |
| 12:30 - 13:30     | Lunch                               | At Annapurna mess                                                                               |
| 13:30 - 13:50     | Opening remarks - Welcome           | Prof.Jayaseelan/Dr. Suparna - explaining the objective, flow of the event, and expected outcome |
|                   | Meet & greet                        |                                                                                                 |
| 13:50 - 14:00     | Dr. Suparna Mitra                   | Short introduction and brief on the field of expertise                                          |
| 14:00 - 14:10     | Dr. Mahua Das                       |                                                                                                 |
| 14:10 - 14:20     | Dr. Manikandan Madheslu             |                                                                                                 |
| 14:20 - 14:30     | Dr. Somasri Dam                     |                                                                                                 |
| 14:30 - 14:40     | Dr. Abhrajyoti Ghosh                |                                                                                                 |
| 14:40 - 14:50     | Dr. Zhumur Ghosh                    |                                                                                                 |
| 14:50 - 15:00     | Dr. Mayilvahanan Bose               |                                                                                                 |
| 15:00 - 15:10     | Prof. Ashwani Kumar Thakur (Online) |                                                                                                 |
| 15:10 - 15:25     | Tea/Coffee break                    |                                                                                                 |
| 15:25 - 15:35     | Prof. Jayaseelan Murugaiyan         | Short introduction and brief on the field of expertise                                          |
| 15:35 - 15:45     | Dr. Saravanan Matheshwaran          |                                                                                                 |
| 15:45 - 15:55     | Prof. Rajib Dasgupta                |                                                                                                 |
| 15:55 - 16:05     | Dr. P. Anand Kumar                  |                                                                                                 |
| 16:15: - 16:25    | Dr. Krupali Patel                   |                                                                                                 |
| 16:25 - 16:35     | Dr. Chandra Sekhar Suppala          |                                                                                                 |
| 16:35 - 16:45     | Dr. S. Shobana                      |                                                                                                 |
| 16:45 - 16:55     | Dr. Srivalli                        | Felicitation of experts immediately after their talk                                            |
| 16:55 - 17:30     | Wind-up and conclusion of Day 1     |                                                                                                 |
| 18:30             | Gala Dinner                         |                                                                                                 |
| *End of Day 1*    |                                     |                                                                                                 |

**India-UK AMR Network Meeting 2026****21st - 23rd Jan, 2026****DAY 2 - Discussion****Date:** 22-01-2026**Location:** ALC-1**Duration:** 10:00 - 17:30

| Time           | Program                 | Details                                                        |
|----------------|-------------------------|----------------------------------------------------------------|
| 10:00 - 10:20  | Day 2 program objective | Welcoming and grouping the delegates                           |
| 10.20 - 11:00  | Open discussion         | Discussion on the ground reality and challenges                |
| 11:00 - 11:15  | Tea/coffee break        |                                                                |
| 11:15 - 01:00  | Breakout sessions       | Five groups on different thematic areas                        |
|                | Theme 1                 | Environmental sampling & resistome profiling                   |
|                | Theme 2                 | Gut microbiome & diet                                          |
|                | Theme 3                 | Modeling & bioinformatics                                      |
|                | Theme 4                 | Chemical/contaminant drivers                                   |
|                | Theme 5                 | Policy & community engagement                                  |
| 13:00 - 14.00  | Lunch & Networking      | At Annapurna mess                                              |
| 14:00 - 15:30  | Discussion              | Summarizing the discussion and outlining the proposal          |
| 15:30 - 15:45  | Tea/Coffee break        |                                                                |
| 16:00 - 17:30  | Online session          | An open platform for everyone to participate in the discussion |
| 17:15 - 17:30  | Conclusion remarks      | Day 2 winding up                                               |
| *End of Day 2* |                         |                                                                |

**India-UK AMR Network Meeting 2026****21st - 23rd Jan, 2026****DAY 3 - Proposal writing****Date:** 23-01-2026**Location:** ALC-1**Duration:** 10:00 - 13:00

| Time           | Program                                            | Details                                        |
|----------------|----------------------------------------------------|------------------------------------------------|
| 10:00 - 12:30  | Identify synergies and collaboration opportunities | Proposal draft, Joint application, Action plan |
| 12:30 - 12:45  | Felicitation of guests                             | Feedback                                       |
| 12:45 - 13:00  | Closing remarks                                    | Prof. Jayaseelan Murugaiyan/Dr. Suparna Mitra  |
| 13:00          | Lunch                                              |                                                |
| *End of Day 3* |                                                    |                                                |





**Figure 1:** Delegates engaging in the joint discussion during the India-UK AMR meeting – 2026 at SRM University-AP, India.



**Figure 2:** Address by the Vice Chancellor, SRM University–AP, at the commencement of the program, Day 1.





**Figure 3:** Participants during a cultural visit on Day 2 of the meeting to the Sri Durga Malleswara Swamy Varla Devasthanam, Vijayawada, offered a perfect blend of cultural exposure and warm academic interaction, making it a spiritually enriching and memorable experience.



**Figure 4:** Delegates and organizers of the India-UK AMR meeting, 2026, captured in a group photograph on Day 3.





**Figure 5:** Group photo of the organizers and research team with conveners Dr Suparna Mitra from the University of Leeds, UK and Prof. Jayaseelan Murugaiyan, SRM University-AP, India, at the successful conclusion of the meeting.