PROJECT BRIEF

Identifying drivers of antibiotic resistance and developing a 'One Health' approach for rational use of antibiotics in humans and animals in Cambodia (CAmBR)

This project will reduce the inappropriate use of antibiotics in humans and animals and the spillover to the environment of antibiotic resistant bacteria in rural Cambodia

Country
Cambodia

Donors
Medical Research Council

Length of project
Six months (development stage)
Three years (proposal/trial stage)

Partners
University of Leeds
Cambodian Ministry of Health, Communicable Disease Division
Cambodian Ministry of Agriculture, Forestry and Fisheries/ Royal University of Agriculture
Karolinska Institutet
Global Health Research and Development
Malaria Consortium

Project outline

The inappropriate use of antibiotics is a major driver of antibiotic resistance (ABR) in lower and middle income countries (LMIC). The Cambodian Ministry of Health's Communicable Disease Division (MOH CDC) and the Cambodian Ministry of Agriculture, Forestry and Fisheries (MAFF) acknowledged the scale of the problem of ABR in humans, as well as in livestock, after a large consultation conducted in 2011. As a result of this, a Working Group for Combating Antibiotic Resistance in Cambodia was established to address the situation. The country situation analysis report and recent bacterial surveillance data revealed a very high burden of antibiotic resistance, especially among Gram-negative bacteria.

ABR in Cambodia is exacerbated by poverty, changing patterns of food production and lack of knowledge among providers and consumers about the correct use of a ntibiotics. Research conducted in central Cambodia shows high levels of inappropriate prescription of antibiotics and poor quality of drugs for both humans and livestock. Health services to remote rural communities are few and are often delivered by community level health workers and animal health officers who are sometimes poorly trained and supervised.

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Antibiotic use in animals raised for food is widespread and uncontrolled, as farmers focus on animal production rather than the consequences of antibiotic use. In rural areas, families raise poultry and pigs in their backyards for food and cash.

Several factors cause a negative impact on ABR, such as the availability of 'over the counter' antibiotics, weak surveillance and laboratory capacity, lack of user-friendly clinical and infection control guidelines, increasing reliance on antibiotics on farms, and limited infection prevention and control in health facilities on farms.

To counter this, the Ministry of Health developed a national strategy and plan for research and strengthened collaboration with laboratories, the National Animal Health and Production Research Institute, the Faculty of Veterinary Medicine, the Royal University of Agriculture (RUA) and the Pasteur Institute.

However, there is limited coordination among the health, animal, agriculture and environment sectors. With antibiotics easily available on the informal market and frequent interactions between humans and animals in their shared environments, a multi-disciplinary intervention, or 'One Health' approach, is required to address ABR.

Systematic reviews of trials in developed settings found that interventions targeting both health workers and patients significantly reduced inappropriate antibiotic prescription in community facilities. Trials conducted with rural doctors and child caregivers on the southern border of China have shown a significant reduction in antibiotic prescription rates for childhood upper respiratory infections.

Project objectives

The project will have two stages: a development phase and a full stage proposal. The development phase will consist of a situation analysis and a report of the findings, an assessment of antibiotics consumption, and development of a map of antibiotic use chain.

During the development phase, the project will:

- Study the drivers of ABR in humans and animals, and in the environment in rural Cambodia using a 'One Health' approach
- Develop a full stage proposal for funding to address the misuse of antibiotics in Cambodia in healthcare settings, farming and in rural communities.

The objectives of the full stage proposal, will be achieved in collaboration with the MOH CDC and MAFF, to:

- Map the prevalence, drivers and residues of ABR in humans, animals and in the environment in rural Cambodia
- Produce locally adapted guides for human and animal antibiotic use and infection control measures for use in the training of health, agricultural and veterinary personnel
- Pilot, revise and evaluate a behaviour change intervention for health workers, farmers and the communities
- Improve dialogue between the healthcare, agricultural and environmental sectors to reduce inappropriate antibiotic use and contribute to a reduction in antibiotic residues in the environment
- Improve awareness on the risks of ABR among policymakers, health providers and end users
- Document, sample, evaluate and demonstrate the prevalence and commonality of ABR and resistance genes in bacteria through animal, human and environmental sampling.

The project will help to improve the knowledge of health staff in health facilities (public and private facilities for both human and veterinary services), among community health workers (human and village animal health workers) and among farmers. It will contribute to better use of antibiotics by patients and drug sellers in public and private pharmacies and in the 'parallel market'. It will also help lead to appropriate use, promotion and dispensing of antibiotics by health workers and veterinarians in slaughter houses, humans living in the vicinity of farms, the pharmaceutical industry, students and professors of medicine and veterinary studies, school teachers, religious leaders, policy makers and other possible end-users in supermarkets or regular shops.

For more information about the project, please contact:
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The project is led by the University of Leeds in the UK with co-investigators The Karolinska Institutet in Sweden, the Global Health Research and Development based in China and Canada, and Malaria Consortium in the UK and Cambodia. The project is supported and directed by the MOH CDC and the MAFF.