

## The 5<sup>th</sup> JPIAMR Call – Summaries of funded projects

The project OPEN Stewardship run by David Fisman at the University of Toronto in Canada, with partners in Sweden, Canada, Israel and the USA, will develop an open web-based system allowing for advanced antibiotic stewardship interventions, in both humans and animals. The project will provide feedback and benchmarking as well as sharing of best practice guidelines and antibiotic resistance patterns.

Jörg-Janne Vehreschild from the University of Cologne, and colleagues from Sweden, Norway, Latvia, Canada and Israel, will study the impact of prescription quality, infection control and antimicrobial stewardship on gut microbiota domination by healthcare-associated pathogens. In their project PILGRIM, the consortium will conduct a comprehensive, multinational, multi-centre clinical study to elucidate the impact of the vancomycin-resistant enterococci (VRE), extended-spectrum beta-lactamase producing *Enterobacteriaceae* (EPE), and *Clostridium difficile* epidemic on patients at high risk of healthcare-associated infections.

The REDUCEAMU project focuses on reducing antimicrobial use in livestock farming in emerging economies. The consortium led by Ulf Magnusson from the Swedish University of Agricultural Sciences and involving partners from Sweden, Norway and Switzerland, will use pig production in Thailand as a study case to test interventions by computer simulations based on primary data generated through a One Health approach. Molecular analysis of AMR profiles, combined with information on knowledge, attitudes and practices related the AMU and animal management among pig farmers, will be used to do spatial analysis and model the impacts of altering practices related to AMU, animal management and farm structure.

Jaap Wagenaar, from Utrecht University, leads a consortium including researchers from Ireland, the Netherlands and Germany, that will study the effect of colonisation resistance (competitive exclusion) on the transmission of livestock-associated methicillin-resistant *Staphylococcus aureus* (LA-MRSA) from pigs to humans. In their project, ExcludeMRSA, the consortium will use bioinformatic and metagenomic methods to identify bacterial species that compete with MRSA, study the efficacy of applying a nasal microbiota to piglets, and estimate the risk reduction of limiting transmission to humans.

Aiden Hollis, from the University of Calgary, with colleagues from Switzerland and Sweden, will conduct a study to examine the alignment of industry incentives with AMR control goals. In their project, ASB, the consortium will perform a multidisciplinary study to explore the feasibility of a finance-based intervention intended to re-align pharmaceutical industry interests with the minimisation of AMR and the prolongation of antibiotic efficacy through time. The antibiotic susceptibility bonus aims to maximise efforts towards good prescribing practice and minimising the risk of acquisition, development and transmission of antibiotic-resistant Gram-negative bacteria.

Peter Søggaard Jørgensen from the Royal Swedish Academy of Sciences, and partners from Canada and Switzerland, study the resilience (the ability of systems to respond to surprise while maintaining vital functions) and transformability of national and regional One Health systems and interventions. In their project named RESILIENCE, the consortium will focus on resistance *Enterobacteriaceae* and MRSA to assess factors governing resilience and transformation in selected high-income and low-middle-income countries (focusing on Thailand and Vietnam), considering the link between agriculture/aquaculture and human health to create a database describing factors determining resilience and transformability, and to identify indicators of resilience and predict future disease dynamics.

In the project INART, Fiona Walsh from Maynooth University in Ireland and colleagues from Canada, Poland, Israel, Ireland and Switzerland, will examine the effect of pre-treatment of chicken and pig manure, used as fertiliser, in reducing or removing the AMR burden in the food chain.

Annelies Verbon, from the Erasmus University Medical Centre in the Netherlands, and partners from Sweden, Switzerland and Canada, will develop and evaluate the AB-assistant, a smartphone based digital stewardship app that is customisable to local antibiotic prescribing guidelines. In the project AB-ASSISTANT the consortium will test the usability of the app in different countries and evaluate its use in an international multicentre, randomised clinical trial involving centres in 4 countries, in order to adapt the app for international use leading to increased adherence to prescription guidelines and reducing antimicrobial resistance.

In the project ARMIS, Ana Maria de Roda Husman from the National Institute for Public Health and Environment in the Netherlands, and partners from Canada, Poland, Romania, Germany and the Netherlands will measure the effectiveness of different manure treatment techniques on AMR reduction throughout the manure chain and analyse process parameters of influence. The consortium will examine AMR emissions from manure and manure treatment systems, and determine exposure risks.

Cees Hertogh from VU University Medical Centre in the Netherlands, with partners from the Netherlands, Sweden, Norway and Poland will conduct studies aimed to reduce antibiotic overuse for urinary tract infections in the elderly. In their project, IMPRES-U, the consortium will implement an algorithm to support clinical decision-making and model the factors contributing to prescribing decisions in this population, as well as conduct a randomised clinical trial to determine the efficacy of the model in patients.