Containing Antibiotic Resistance:
A One Health Chinese-Swedish Research Collaboration

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One Health approaches are needed to minimise emergence and dissemination of resistant bacteria. IMPACT is a research programme supported by eleven universities and institutions in China and Sweden with expertise in human, animal and environmental health. The mixed methods programme has two components:

1) Data collection to increase knowledge of the complex routes of dissemination of antibiotic resistance between different sectors, and of factors influencing irrational use of antibiotics in humans and animals

2) Designing, implementing and evaluating a pilot intervention to limit development and spread of AMR

Planning phase
- Establishing specific research questions and methods
- Development of study tools
- Selection of study sites and basic data collection
- Capacity building through workshops

Qualitative data collection
- Six focus group discussions with village residents
- Semi-structured interviews with village clinic doctors

Continuous data collection

Clinical isolates
Collected at the town hospital (MRSA and ESBL-producing *Enterobacteriaceae*)

Village clinic prescriptions
600 prescriptions per year at each clinic

Household antibiotic use
Antibiotic consumption for humans and pigs monitored at 200 households for 15 months

2014

2015

2016

2017

2018

Baseline cross-sectional data collection

Household questionnaires
Rural residents in 769 households were asked about their knowledge, attitudes and practices regarding antibiotic use and resistance for humans and pigs, and about their health seeking behaviours

Microbiology sampling
Commensal samples were taken at households from humans and from pigs. Analyses focus on carriage of MRSA and ESBL-producing *Enterobacteriaceae*
Environmental samples were also taken from drinking water sources, rivers, wastewater, vegetables and soil

Pilot intervention
- Six intervention villages
- Six control villages
- One year intervention period

For rural residents
Information on antibiotics and aspects about antibiotic use and antibiotic resistance in humans, animals and environment:
- Audiotapes (three times a week on village speakers)
- One lecture every three months
- Booklets and posters

For healthcare practitioners
Training programmes for veterinarians and village clinic doctors, once every three months on:
- Rational antibiotic use
- Infection prevention and control

Post-intervention cross-sectional data collection
Following the same pattern as the baseline

Lessons learned

One Health understanding: Time must be invested to develop shared conceptual frameworks among all researchers, and for joint planning of data collection

Communication: Regular contact is essential, both within smaller task focused working groups and programme wide

Harmonising data: A labelling system can facilitate linking different data types, together with regular quality checking

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影响力 IMPACT
SINO-SWEDISH INTEGRATED MULTI-SECTORIAL PARTNERSHIP FOR ANTIBIOTIC RESISTANCE CONTAINMENT