



Social and cultural drivers and strategies to reduce the global burden of antimicrobial resistance

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Social science-informed AMR research

- PI, *Implications of COVID-19 for AMR and antimicrobial stewardship in China and other LMIC settings* (BSAC)
- PI, *Addressing antimicrobial resistance as a global public health issue in settings of precarity [MENA region]*. (QR GCRF EKP)
- PI, *Strategies to reduce the burden of antibiotic resistance in China* (Newton Fund)

<http://www.bristol.ac.uk/population-health-sciences/centres/star-china/>

- PI, *'Pathways to optimising antibiotic use in Anhui: Identifying key determinants in community and clinical settings'* Newton Fund (MRC/NSFC)
- Co-I, *'One Health drivers of AMR in Thailand'* (GCRF/UKRI/DoH)

<https://gtr.ukri.org/projects?ref=MR%2FS004769%2F1>

- PI, *Regulating resistance, resisting regulation: New regimes to tackle drug-resistant infections in European and Asian healthcare systems* (Wellcome Trust)

<https://wellcome.ac.uk/what-we-do/directories/seed-awards-humanities-social-science-people-funded>

- Co-I, *'Resolving the fate and studying the impact of pharmaceutical wastes on the environment and local community of a pharmaceutical manufacturing hub [India]'* (NERC/DBT)

<https://gtr.ukri.org/projects?ref=NE%2FT013230%2F1>

- ESRC AMR Champion 2015- 2017 <http://www.bristol.ac.uk/amr/>

H. Lambert (UK PI) & B. Zheng (China PI)

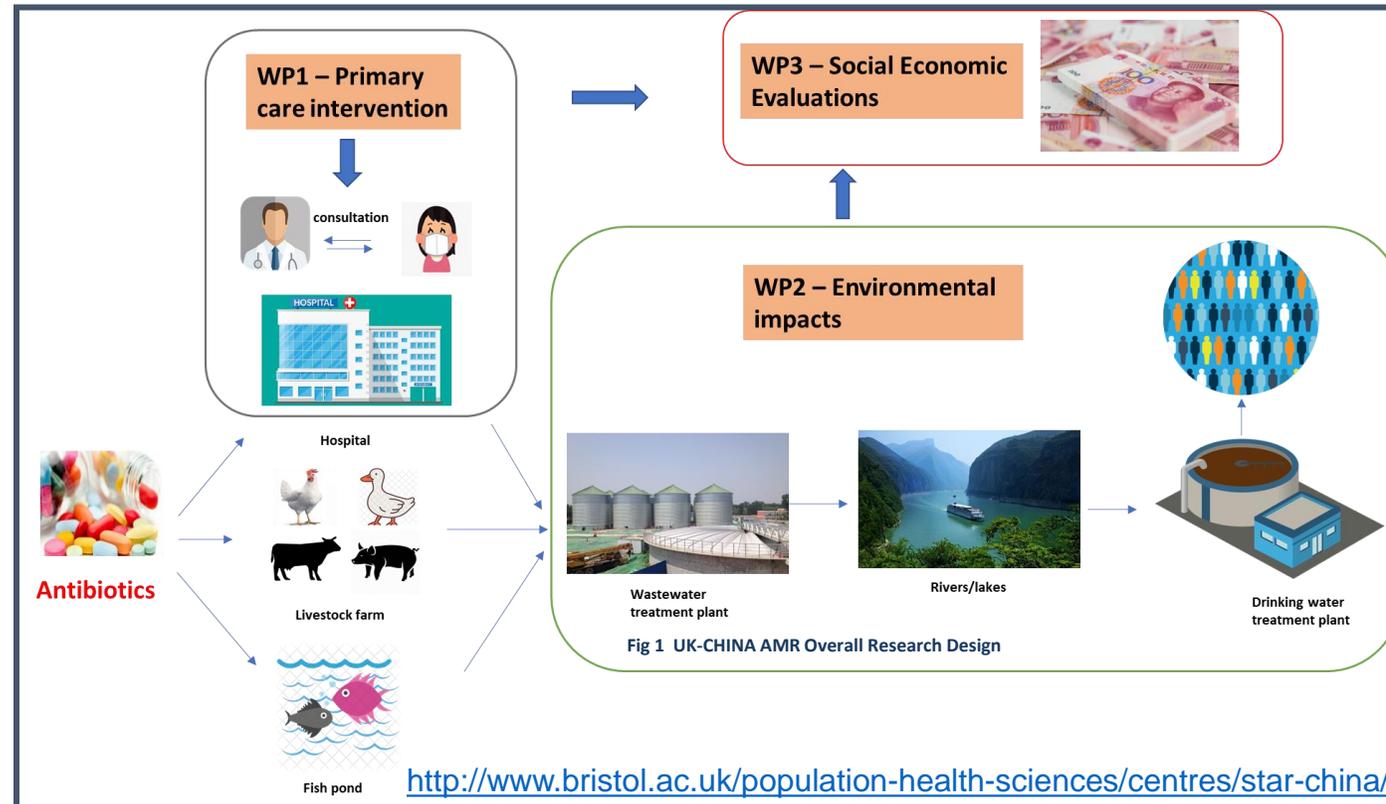
Hub partners: Peking, Fudan, Anhui Medical, Leicester, Bath, Southampton, Public Health England, North Bristol NHS Trust

Introduction

Existing AMR studies have investigated the epidemiology and pattern of drug-resistant infections in China, but the size of the health and economic burdens caused by ABR on a national level and the role of the environment in the development and transmission of drug resistance are still unclear. Our research aims to bridge these key evidence gaps and strengthen disciplinary and methodological research skills, through a set of closely linked projects that will generate the holistic knowledge which is needed to design, deliver and monitor targeted strategies to limit ABR in China and comparable settings.

Research objectives

- Estimate the economic burden of AMR in China and determine the cost-effectiveness of ABR-reducing intervention strategies.
- Design and evaluate a tailored intervention to modify antibiotic prescribing behaviour among health professionals and reduce antibiotic consumption.
- Measure human exposure to antibiotics from direct and indirect (water and food animal) sources, estimate their health effects and develop new tools for risk assessment and monitoring of environmental exposures to antibiotics and antibiotic resistant genes



Progress so far

- WP1: all training materials for village clinician training and DSS system, patients' and clinicians' think-aloud interviews complete. Baseline recruitment to trial proceeding.
- WP2: pilot and feasibility studies complete, household cohort survey, two rounds of medicine diary and environmental sampling completed.
- WP3: data extraction design, sample size calculation, hospital selection, target bacteria identification completed, surveillance datasets accessed and extraction completed.
- 12 UK training courses for Hub researchers from China and training workshop in Beijing completed.

Stewardship intervention (WP1): RCT in rural clinics uses insights into sociocultural drivers

Biomedical knowledge of antibiotics & AMR 'awareness' does **not** result in optimal prescribing and dispensing behaviour due to:

- Financial arrangements built into healthcare systems

e.g. [on prescribing IV antibiotics] *"If you give the patient infusion, the effect is faster, it will attract more patients, the income will be better"* (doctor at village clinic)

- Public understanding of antibiotics as anti-inflammatory

e.g. *"I would say 'anti-inflammation medicine' to refer to 'antibiotics' so that the patients can understand"* (doctor at Township Health Centre)

- Limited communication and short consultation times

<50% of patients attending rural health facilities and customers purchasing antibiotics OTC knew that the medicines obtained contained antibiotics

<https://doi.org/10.1037/s41599-019-0293-y>

OPEN

Antimicrobial resistance, inflammatory responses: a comparative analysis of pathogenicities, knowledge hybrids and the semantics of antibiotic use

Helen Lambert¹, Meixuan Chen¹ & Christie Cabral²

<https://www.nature.com/articles/s41599-019-0293-y>

frontiers
in Sociology

ORIGINAL RESEARCH
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Prescribing Antibiotics in Rural China: The Influence of Capital on Clinical Realities

Meixuan Chen^{1,2}, Paul Kadetz^{1,4*}, Christie Cabral¹ and Helen Lambert¹

Shen et al. BMC Fam Pract (2021) 22:87
<https://doi.org/10.1186/s12875-021-01448-2>

BMC Family Practice

RESEARCH ARTICLE Open Access

Clinical diagnosis and treatment of common respiratory tract infections in relation to microbiological profiles in rural health facilities in China: implications for antibiotic stewardship

Xingrong Shen^{1,2}, Jilu Shen², Yaping Pan¹, Jing Cheng², Jing Chai², Karen Bowker¹, Alasdair MacGowan¹, Isabel Oliver¹, Helen Lambert¹ and Debing Wang^{1,2*}

RESEARCH ARTICLE Open Access

Patients without records and records without patients: review of patient records in primary care and implications for surveillance of antibiotic prescribing in rural China

Rachel Kwiatkowska^{1,2*}, Xingrong Shen¹, Manman Lu³, Jing Cheng³, Matthew Hickman^{1,4}, Helen Lambert⁴, Debin Wang¹ and Isabel Oliver^{1,2*}

WP2: Environmental impacts



Site 1,
Jiangsu
Province

Irrigation
canals
running
between
rows of
houses

GW⁴

Irrigation canal water use

Poultry farming (duck, chicken, geese)



Crab breeding



Washing vegetables



Piped and well water arrangement in a backyard





Shrimp pond



Fish farming channels



Site 2, Zhejiang Province – aquaculture

One Health Drivers of AMR in Thailand (OH-DART)



- Similarly complex ecologies of water use; field site adjacent to major river and a canal that supplies Bangkok
- Drinking water may be from
 - community filtration plant (though subscription)
 - household filter (one-off purchase)
 - bottled drinking water
- Large migrant population (mainly Burmese) of factory workers – low wages, poor living conditions
- Extreme diversity in livelihoods, food sources and consumption practices

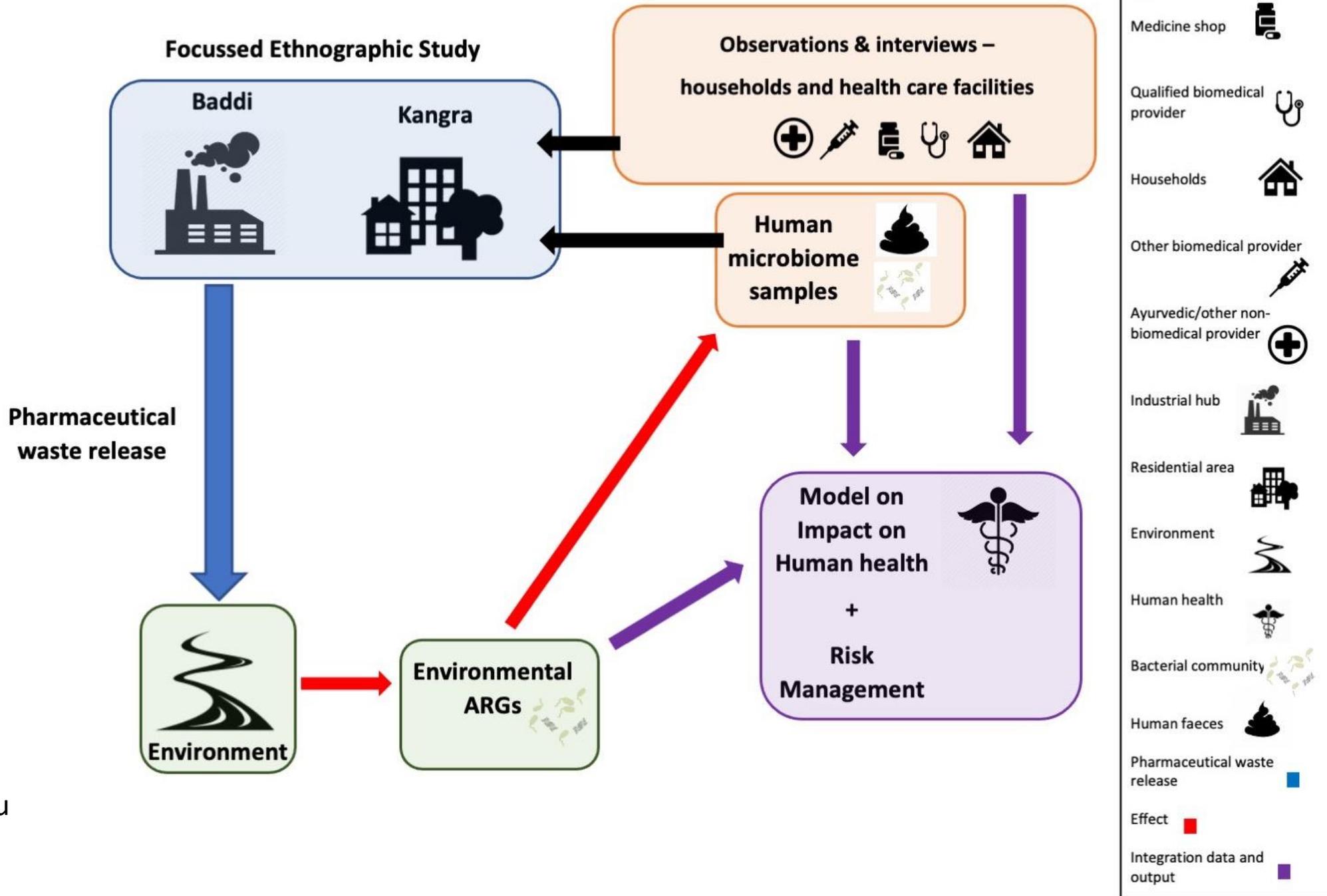
ResPharm

Resolving the fate and studying the impact of pharmaceutical wastes on the environment and local community of a pharmaceutical manufacturing hub

North India sites

Baddi = highly polluted, dense migrant worker slum settlements

Kangra = 'pristine', Hindu pilgrimage site



Social and cultural drivers - AMRA's interdisciplinary, One Health approach

- Context-specific ecological variations in socio-cultural arrangements require social science observation & investigation as well as mapping and measurement
- Measuring environmental exposure to antibiotic residues and antimicrobial resistance genes is only first step
- Strategies and solutions must be informed by understanding of specific local practices and their sociocultural drivers
- How we frame the problem influences what solutions we consider, research and invest in

Thank you!

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Collaborators:



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