AMIS

FRESH APPROACHES *to the* STUDY *of*
ANTIMICROBIALS *in* SOCIETY

Final Report

2021

LONDON SCHOOL of HYGIENE &TROPICAL MEDICINE

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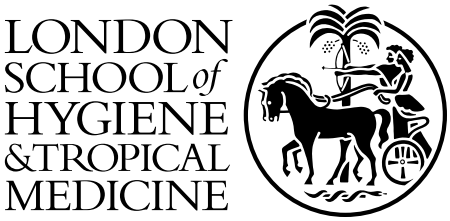
The Antimicrobials In Society (AMIS) grant was awarded by the Economic and Social Research Council (ESRC) on behalf of the Antimicrobial Resistance Cross Council Initiative supported by the seven Research Councils UK (RCUK) in partnership with other funders [ES/P008100/1].



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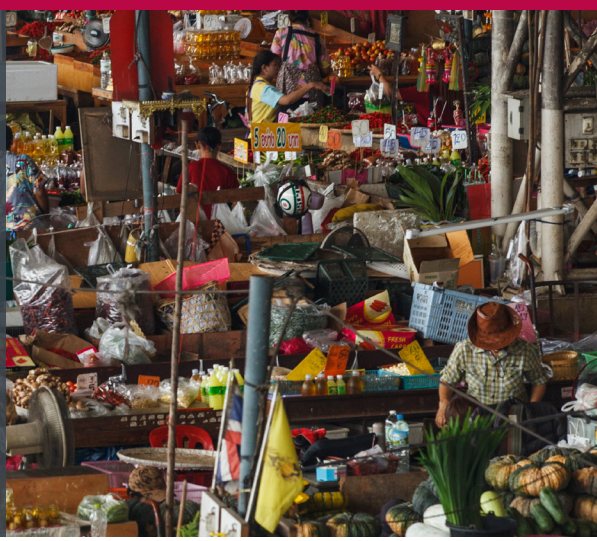
Foreword from our Principal Investigator



I am delighted to share this final report on the AMIS Programme. The culmination of more than four years of collaborative activity, it is hard to do justice in this report to the tremendous work of all those involved in the programme. Through the highlights detailed here, readers will get a sense of the scope of the activity, the depth of analysis, and the strength of commitment to fresh perspectives on AMR that has characterised this collaborative programme.

The findings from across the AMIS programme contribute to knowledge on how antibiotics are used and to provide insights to policy, programmes and researchers on ways to reduce reliance on antimicrobials that address practices, structures and networks. These insights are directly relevant to countries implementation of national action plans on AMR and it is inspiring to have seen the engagement of the AMIS teams with national and international policy makers and practitioners to enable uptake of findings. The research materials and outputs will also be directly relevant to researchers across disciplines who aim to expand understanding of antimicrobial use around the world.

Our teams built on substantial platforms of research and networks to generate this programme, and as a co-investigator team, we are delighted to see our vision to expand on these come to fruition. Every member of our teams throughout the programme has co-produced the distinctive character and ethos of our activity, and I look forward to seeing the approaches and findings inform future research and programmes in the future.

Finally, on behalf of our co-investigator team, we offer our thanks to all the research participants, stakeholders, advisors, collaborators and mentors as well as to our funders, to whom we are indebted for enabling the AMIS research and hub activities to happen.

Professor Clare Chandler
London School of Hygiene & Tropical Medicine, July 2021

The AMIS Programme

Background

Antimicrobial resistance (AMR) is a potentially catastrophic global problem. Our use of antimicrobial drugs, including antibiotics, has escalated. These medicines are now a routine part of everyday life. For example, we use antibiotics not only to cure infections but in anticipation of infection for people, animals, and crops. We propose that the ways antibiotics are used is deeply embedded in the ways our societies and economies work. It is important to understand the extent and nature of the way we have become intertwined with these medicines in order to understand the consequences of resistance and the best ways to reduce it as a threat.

Policy makers have agreed that to address AMR we must reduce our reliance on antibiotics. But how and for whom? The AMIS programme promoted fresh approaches to the study of antimicrobials in society. Drawing on conceptual and methodological tools primarily from anthropology, but in conversation with other disciplines, the AMIS research projects traced out the multiple roles that antimicrobials take in society today, and how they enable everyday life.

Work Strands

The AMIS programme ran from April 2017 to July 2021 and comprised two parallel work strands – a set of **AMIS research and dissemination activities**, which explored our research questions in Uganda and Thailand, and the **AMIS Hub**, which aimed to promote fresh approaches in social research on AMR. Across these work strands our core commitments were to undertake innovative social research on AMR, promoting fresh approaches to AMR research amongst our own teams as well as the wider research community, and two-way engagement with a range of local, national and international stakeholders on the topic of antimicrobials in society.

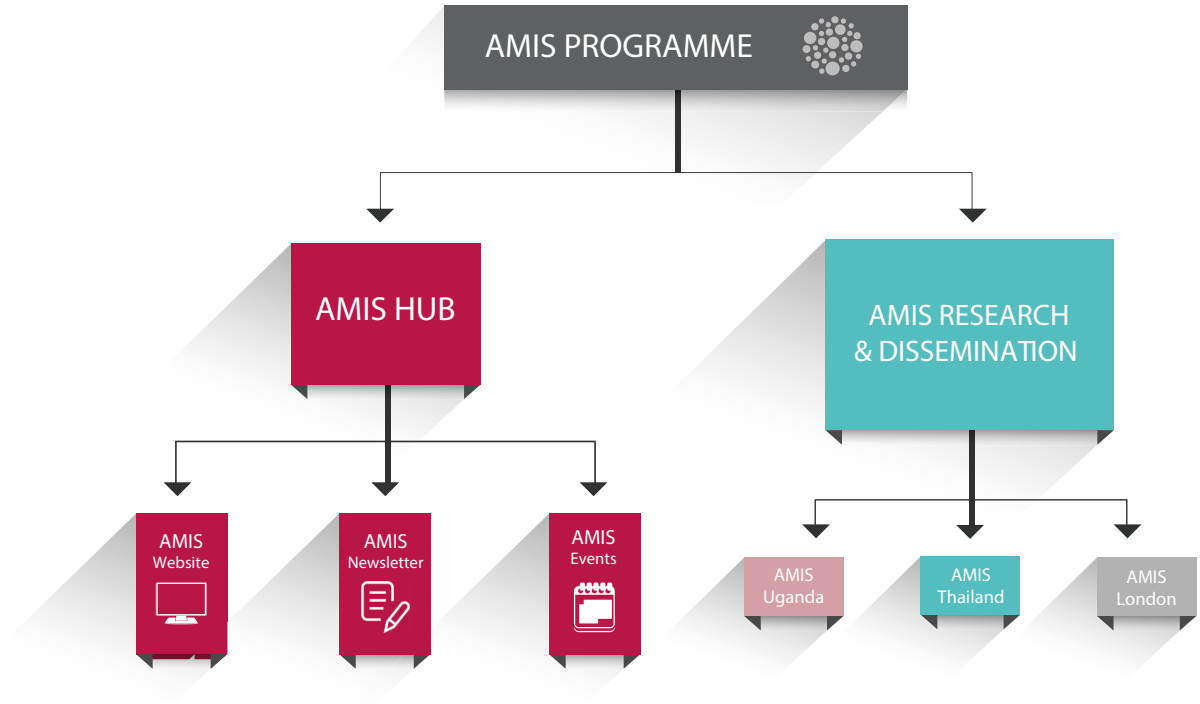
Aims

The AMIS programme aimed to stimulate engagement with social research that presents different ways of conceiving, responding to, and framing global health issues, including AMR. Drawing on novel research tools from anthropology, the mapping of antibiotic roles in society, and collaborations with diverse stakeholders across countries, the AMIS programme sought to open the field of AMR research beyond its traditional boundaries. We aimed to demonstrate the rich social material worlds that antimicrobials inhabit and travel within, and in doing so offer policy-makers, scientists, and funders new ways to conceptualise and act upon AMR.

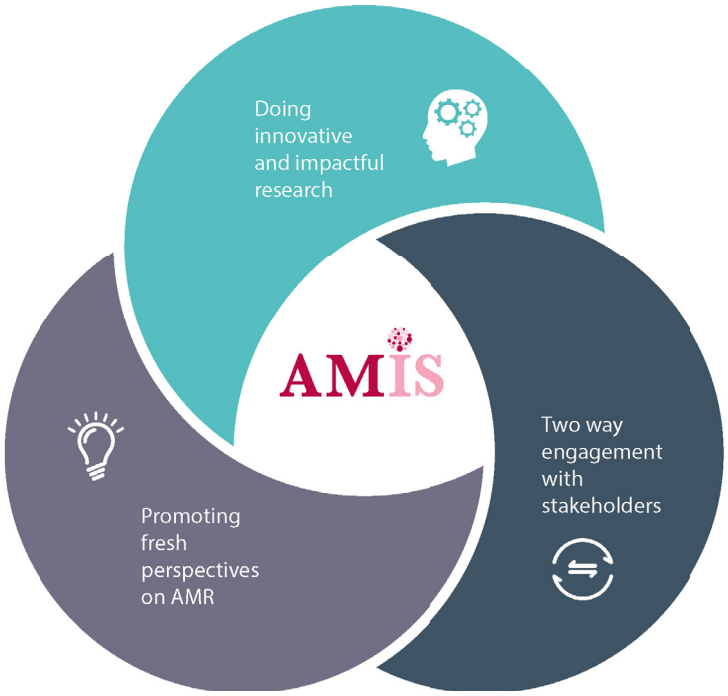
Final Report

This final report highlights our work on the three key commitments of the AMIS programme: research, stakeholder engagement and promoting fresh approaches. The report summarises the key activities, findings and outputs from across the programme.

AMIS Programme work strands



AMIS Programme core commitments



The AMIS Teams

UK Based Team

Clare Chandler | AMIS Principal Investigator and Professor in Medical Anthropology, London School of Hygiene and Tropical Medicine.
Clare's research focus has been on the use of antimicrobial medicines and diagnostics in global health. She directs the LSHTM Antimicrobial Resistance Centre and leads the Anthropology of AMR research team. As PI, Clare had overall responsibility for the running of all work streams of the AMIS Programme. She also was responsible for supporting the research work of the AMIS Uganda project.

Coll de Lima Hutchison | AMIS co-Investigator, LSHTM
Coll is an anthropologist of science from LSHTM's Department of Global Health and Development. His research explores diverging narratives of modernity, the human, futures and their intersection with microbiology and global health policy. Coll was responsible for supporting the AMIS Thailand project, in particular the Ministry of Public Health team.

Laurie Denyer Willis I AMIS Hub research fellow 2017-2019, LSHTM.
Laurie is a medical anthropologist concerned with the urban and political ecologies of health and disease in post-colonial landscapes. Her research explores animal-human relations, religion, and shifting meanings of care. Laurie was responsible for supporting the research work of the AMIS Uganda project and for promoting fresh perspectives on AMR through the AMIS website and newsletter.

Anna Perris I AMIS Research Assistant 2020-2021, LSHTM.
Anna is an anthropologist by training and previously worked as a researcher in patient experience, collaborating with organisations including the WHO and the NHS, to improve patient care. Anna was responsible for supporting the research work of the Mahidol team within the AMIS Thailand project and the AMIS newsletter.

Alice Tompson I AMIS Research Fellow 2020-2021.
Alice is an experienced public health researcher and has a PhD in medical anthropology on the topic of antimicrobial use in UK companion animals. Alice was responsible for coordinating AMIS events and led the synthesis report on addressing antibiotic use.

Paula Palanco Lopez I AMIS Research Assistant 2021, LSHTM.
Paula is a medical anthropologist with a background in development studies and communication. Paula was responsible for researching the historiography of drugs: the arrival and generalisation of antibiotics, specifically in East Africa.

Bianca de Souza | AMIS Strategy Fellow 2017-2018, LSHTM
Bianca is a public health and policy professional with UK and international experience in research, programme and grant management. Bianca set up and launched the AMIS Hub community platform, including the website, newsletter and launch events.

Pat Ng | AMIS Project Manager 2017-2019, LSHTM
Pat had a background as a grants manager at multiple funding agencies and at UK universities before joining the LSHTM.

Jenny Westad I AMIS Project Manager 2019-2021, LSHTM.
Jenny had training in anthropology and public health before working in this management role.

Rachel Ford I AMIS Administrator 2020-2021, LSHTM.
Rachel has a background in nursing and public health. She was responsible for administrative and financial support and supported the delivery of webinar events.

Uganda Based Team

Susan Nayiga I AMIS co-Investigator and Senior Social Scientist at the (IDRC), Uganda.
Susan has researched topics relating to medicines and health care for the past 15 years through which she developed a research interest on understanding the consequences of tackling AMR in Uganda. Her PhD – undertaken alongside the AMIS programme – sought to understand how the imperative to restrict antibiotics impacts care. She led the AMIS Uganda team, and led the fieldwork in Tororo.

Sarah Staedke I AMIS Hub co-Investigator and Professor of Malaria and Global Health, LSHTM and IDRC, Uganda.
Sarah is a clinical epidemiologist based in Uganda where she has conducted research since 1999. Her research is focused on methods to improve quality of care and fever case management, and novel approaches to prevent and control malaria. She co-led the AMIS Uganda team's portfolio of research.

Christine Nabirye I AMIS researcher 2017-2021, IDRC, Uganda.
Christine is a Senior Social Scientist who has substantial experience in qualitative research informed by medical anthropology, with a special interest in researching health care delivery in low resource settings. She led the AMIS Uganda research in Namuwongo informal settlement, Kampala.

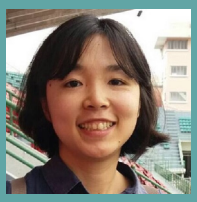
Miriam Kayendeke I AMIS researcher 2017-2021, IDRC, Uganda.
Miriam is a Senior Social Scientist with extensive experience working on infectious diseases research while utilising qualitative research methods. Her current interest is in employing ethnographic tools to the study of human behaviour in the use of antimicrobial medicines. She led the AMIS Uganda research in Wakiso peri-urban district, with a focus on farming.

Thailand Based Team

Komatra Chuengsatiansup I AMIS co-Investigator, Ministry of Public Health (MoPH) Thailand and Director of the Princess Maha Chakri Sirindhorn Anthropology Centre (SAC), Thailand.
Komatra has researched community health and social policy including community drug use, village health volunteers, and primary care in Thailand. Komatra started the grant as Director of the Society and Health Institute at the Ministry of Public Health and was instrumental in integrating an anthropological perspective in health policy development and implementation. Komatra was responsible for leading the MoPH team's work in the AMIS Thailand project.

Luechai Sringernyuang I AMIS co-Investigator, Associate Professor in medical anthropology and Dean of Mahidol University (MU)'s Social Science Department.
Luechai has extensive research experience in pharmaceutical use in Thailand, especially self-medication with modern pharmaceuticals in rural communities. Luechai was responsible for leading the MU team's work in the AMIS Thailand project.

Wirun Limsawart I AMIS Researcher 2017-2021.
Wirun became the Director of the Society and Health Institute (SHI), MoPH Thailand during the AMIS project. Wirun is a medical anthropologist and has conducted research in the use of the "bio-social interaction framework" – linking in-depth biological studies and social analysis – to understand the global and local problems of antimicrobial resistance. From 2019, Wirun was responsible for leading the MoPH team and he headed the fieldwork on migrant workers.



Thitima Urapeepathanapong I AMIS Researcher 2017-2021.
Anthropologist at SHI, MoPH Thailand. Thitima's previous experience includes media studies, digital security, business, human rights, and disaster. Thitima led the research on antibiotic use and greening disease in citrus orchards in Thailand.

Sittichoke Chawraingern I AMIS Researcher 2017-2021, Lecturer in Sociology and Medical Anthropology at Thammasat University Thailand, previously SHI, MoPH Thailand.
Sittichoke has conducted anthropological research on community responses to natural disasters, cultural and health risks in Thailand. He led the research on antibiotics and counterfactuals in pigs, and antibiotics in care practices.

Chutchon Ajanakitti I AMIS Researcher 2020-2021.
Chutchon Ajanakitti is a medical anthropologist at the SAC, Thailand. Chutchon led the research on methodology (specifically the Following Method), and counterfactuals of antibiotic use as part of the MoPH team.

Uravadee Chanchamsang I AMIS Researcher 2017-2018, MoPH Thailand.
Uravadee is researcher at the SHI. Her background is in medicine and medical sociology. She conducted her master's thesis on the medical socialization of Thai physicians. Following her work with AMIS, Urvadee has moved on to take a position with the Department of Traditional Medicine in Thailand. Uravadee led the research on traditional medicines as antibiotic counterfactuals as part of the MoPH team.

Panoopat Poompruek I AMIS Researcher 2017-2021.
AMIS Researcher 2017-2021. Panoopat is a medical sociologist and pharmacist at faculty member at Department of Community Pharmacy, Silpakorn University. He has research experience in ethnographic studies on the phenomenon of medicine use by kathoeis (transgender women) to modify their bodies. Panoopat led the research on antibiotics in pharmacies and homes as part of the MU team.

Phakha Whanpuch I AMIS Researcher 2017-2021, MU and project manager of the AMIS programme in Thailand.
Phakha has conducted ethnographic fieldwork in Nakhon Pathom, with a specific focus on the anthropology of pharmaceuticals. She led the research on antibiotic use in home care and bedridden patients as part of the MU team.

Members of the Thai, Uganda and London AMIS teams, Bangkok March 2019

AMIS Mentors

The AMIS programme has benefited from the inspiration and guidance of a diverse group of scholars with expertise relevant to the programme's goals, spanning the humanities, biological, clinical, and social sciences, to give advice and support.

History:
Dr John Manton, LSHTM
Professor Scott Podolsky, Harvard University
Dr Claas Kirchhelle, University College Dublin

Clinical Medicine:
Professor Shunmay Yeung, LSHTM
Professor Nick Feasey, Liverpool School of Tropical Medicine

Microbiology:
Dr Richard Stabler, LSHTM

Sociology:
Professor Nik Brown, University of York
Professor Hannah Landecker, University of California Los Angeles

Pharmacology:
Dr Harparkash Kaur, LSHTM

Anthropology:
Dr Ann Kelly, Kings College London
Professor Simon Cohn, LSHTM

Veterinary Medicine:
Professor Richard Kock, Royal Veterinary College

Policy:
Professor Nick Mays, LSHTM

Geography:
Professor Jamie Lorimer, University of Oxford
Dr Uli Beisel, Berlin University
Professor Steve Hinchliffe, University of Exeter

Economics:
Professor Richard Smith, University of Exeter
Professor Kara Hanson, LSHTM

AMIS team with some of the AMIS mentors, London 2019

AMIS Governance

Leadership team

The lead investigators from each AMIS team formed the leadership group: Komatra Cheungsatiansup at MOPH, Thailand, Luechai Sringernyuang at MU, Thailand, Susan Nayiga at IDRC, Uganda and Clare Chandler at LSHTM in the UK. This group met every four to six weeks together with the programme manager on a leadership call, where progress and challenges were discussed, and plans were made and agreed upon. Each lead investigator was responsible for the management of their research teams and the progress of their projects. Other team members joined the leadership call where relevant to other aspects of the AMIS programme, such as for event planning.

Mentors

The AMIS programme's mentors provided insights from a range of disciplinary perspectives on the overall direction of the programme.

In-country advisory committees

Within each country, an advisory committee provided guidance on areas of focus, interpretation of findings and how to maximise the impact of our research.

AMIS Uganda Advisory Committee

AMIS UGANDA
FRESH APPROACHES *to the* STUDY *of* ANTIMICROBIALS *in* SOCIETY

Prof. Elizeus Rutebemberwa I Chair and member representing public health
Makerere University School of Public Health

Dr. Ian Clarke I Member representing human health care
Clarke Group

Dr. Henry Kajumbula I Member representing biomedical sciences
Makerere University, Department of Microbiology

Prof. Denis Byarugaba I Member representing veterinary sciences
Makerere University School of Veterinary medicine

Dr. Kirembe Gerald I Member representing production and marketing
Wakiso District Veterinary Office

Dr. David Kaawa-Mafigiri I Member representing medical anthropology
Makerere University, School of Social Sciences

Prof. Anne Ruhweza Katahoire I Member representing social anthropology
Makerere University, Child Health and Development Centre

Prof. Anthony Mbonye I Member representing public health and policy
Makerere University School of Public Health

Dr. Erechu Sam Richard I Member representing Ministry of Agriculture
Ministry of Agriculture, Animal Industry and Fisheries

Ms.Victoria Nambasa I Member representing National Drug Authority
Directorate of Product Safety, National Drug Authority

Dr. Daniel Okellol Member representing Kampala District
Kampala Capital City Authority Public Health Directorate

Dr. Okumu David I Member representing Tororo District
Tororo District Health Team

Ms. Harriet Akello I Member representing Ministry of Health
Pharmacy Department, Ministry of Health

Members of the AMIS Uganda Advisory Committee with the AMIS Uganda team, August 2017

AMIS Thailand Advisory Committee

AMIS THAILAND
FRESH APPROACHES to the STUDY of ANTIMICROBIALS in SOCIETY

Dr.Suwit Wibulpolprasert I International Health Policy Program

Professor Visanu Thamlikitkul I Faculty of Medicine Siriraj Hospital, Mahidol University

Assistant Professor Niyada Kiatying-Angsulee I Thai Drug Watch Organization

Assistant Professor Tawatchai Sakpuaram I Director of Veterinary Council of Thailand

Nithima Sumpradit I Food and Drug Administrator, Ministry of Public Health

Noppakun Thammatacharee I Health Systems Research Institute (HSRI)

Vanchai Tantivitayapitak I PPTV channel (A digital terrestrial television in Thailand)

Professor Pattarachai Kiratisin I Faculty of Medicine Siriraj Hospital, Mahidol University

Dr.Suriya Wongkongkatep I Senior consultant in public health and health systems, Ministry of Public Health

Dr.Yot Teerawattananon I Health Intervention and Technology Assessment Program (HITAP)

Saipin Suputtamongkol I Faculty of Sociology and Anthropology, Thammasat University

Prasan Ingkanunt I Managing Director of Boon-Me-Rit media Co., Ltd.

Members of the AMIS Thailand advisory committee with the AMIS Thailand team, December 2020

Annual Meetings

Each year the AMIS team convened at LSHTM to discuss progress, key research themes and future plans. These annual meetings also provided the opportunity to conduct some of the face to face training for the programme members. Each meeting had a different focus as outlined below.

Year 1 (2017) – The inception meeting concentrated on project planning and included four days training on project management, public and policy engagement and qualitative data analysis. An advisory committee meeting was also held.

Year 2 (2018) – The meeting in the second year of the project considered interdisciplinary engagement and also I included interim cross-country data analysis.

Year 3 (2019) – This meeting reviewed the progress made and discussed key fieldwork findings. This meeting also included a public seminar where AMIS researchers presented a vignettes of their research and experiences in the field.

Year 4 (2020/21) – Due to the COVID-19 pandemic, our final annual meeting, planned to include a dissemination event, was converted into an online webinar series, presenting the AMIS findings alongside others in the social science of antibiotics field.

Research

Rationale

Anthropologists and other social scientists began to study western pharmaceutical medicine use as a cultural phenomenon many decades ago. This body of scholarship has demonstrated diverse rationales for the use of medicines including antibiotics[1]; see for example, research previously conducted by AMIS research team members[2]. However, these insights continue to go largely unaccounted for in current national and global health approaches to antibiotic use interventions, which have seen an increased focus on behavioural change and awareness programmes which centre individual cognitive decision making. Recognising that the use of antibiotics has escalated such that they are now part of everyday life, we proposed that existing scholarship on medicines could usefully be extended and expanded both empirically and theoretically.

Drawing on conceptual and methodological tools from anthropology, philosophy, history and Science and Technology Studies (STS), which team members reviewed prior to conducting this research[3], the AMIS project teams attempted to decentre human agency and follow antibiotics and the arrangements they have brought into being across different scales and registers. We proposed that the ways in which these medicines are used is deeply embedded in the ways our societies and economies work. It was therefore important to understand the extent to which daily life had become 'intertwined' with these medicines in order to understand the consequences of AMR and the best ways to reduce its threat. Our research therefore aimed to unfold the multiple ways in which antibiotics bring into being current forms of our societies and economies today. We sought to detail how everyday life across different places and spaces is intertwined with – and co-constituted by – antibiotics. We aimed to trace the wide-reaching reasons for our reliance on these substances and to provide detailed accounts that could be used by policy makers and scientists working on antibiotic resistance in Uganda and Thailand today.

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[1] Whyte SR, Van d Whyte SR, Van der Geest S, Hardon A. (2002) Social Lives of Medicines. Cambridge: Cambridge University Press; Boonmongkon P, Nichter M, Pylypa J.(2001) Mot Luuk problems in northeast Thailand: why women's own health concerns matter as much as disease rates Soc Sci Med, 53, 1095-1112

[2] Chuengsatiansup K, Sringernyuang L, Paonil W. (2000) Community Drug Use in Thailand: A situational review. Action Program on Essential Drugs. Thailand, World Health Organization; Sringernyuang L. (2000) Availability and use of medicines in rural Thailand. PhD Thesis. The Netherlands, University of Amsterdam.

[3] Chandler CIR, Hutchinson E, Hutchison C. (2016) Addressing Antimicrobial Resistance Through Social Theory: An Anthropologically Oriented Report. UK, London School of Hygiene & Tropical Medicine. Available online at http://researchonline.lshtm.ac.uk/3400500/; Chandler CIR, Hutchison C (2016) Anthropology and Antimicrobial Resistance. Brief for ESRC AMR Social Science Champion. UK, University of Bristol.

Research questions

Across numerous case studies, the project sought to answer the following research questions:

1. What are the roles of antibiotics in every-day life and infrastructure?
2. What is the impact on care of imperatives to restrict antibiotics?
3. What might counterfactuals to antibiotic use be and how might they work?

Theoretical orientation

The design of our research drew from a range of theoretical work. We grouped these into four themes: (1) the anthropology of care, (2) anthropology of pharmaceuticals and markets, (3) anthropology of knowledge, and (4) multispecies anthropology. Thinking with the anthropology of care, we considered care as socially constituted, flexible and uncontained[4]. We paid attention to how care is politically, socially and economically determined. The anthropology of pharmaceuticals and markets allowed us to investigate how the use of antibiotics is shaped by the multitude of contexts within which they are prescribed, sold, and traded[5]. We took on the notion of the social lives of medicines, following antibiotics into different places and spaces[6]. We also explored both the nature and scale of markets that antibiotics are traded in, and how these markets have been shaped by specific histories and political economies[7]. The anthropology of knowledge includes exploration of global health as a scientific-policy-implementation object and the histories that have shaped this (including colonial and missionary medicine), and our research analysed key moments, political issues and narratives that have shaped the landscape and instruments of global health today[8]. We drew upon multispecies anthropology to consider the way human life is entangled with microbes, animals, plants and the environment,[9] and how attention to these non-human forms enables a de-centering of human agency in the emergence of phenomena such as AMR.[10] We developed a detailed description of each of these four themes on our website.

Methods

The AMIS research in Uganda and Thailand comprised multiple case studies that followed antibiotics and their entanglements across places and scales. The research was primarily ethnographic, involving extended periods of immersive observation in particular settings, with interviews and group discussions with a range of actors in the spheres of our research questions.

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[4] Mol A. (2008) The Logic of Care. Health and the problem of patient choice. London: Routledge.
[5] Bell SE, Figert AE. (2015) Moving Sideways and Forging Ahead. Reimagining "-Izations" in the Twenty-First Century. In Reimagining (Bio)Medicalization, Pharmaceuticals and Genetics. Bell SE, Figert AE, eds. Pp. 19-40. New York: Routledge. Biehl J. (2006) Pharmaceutical Governance. In Global Pharmaceuticals: Ethics, Markets, Practices. Petryna A, Lakoff A, Kleinman A, eds. Durham, NC: Duke University Press.
[6] Whyte SR, Van der Geest S, Hardon A. (2002) Social Lives of Medicines. Cambridge: Cambridge University Press.
[7] Kirchhelle, C. (2020). Pyrrhic Progress. The History of Antibiotics in Anglo-American Food Production. London, Rutgers University Press.
[8] Biehl J, Petryna A, eds. (2013) When People Come First. Critical Studies in Global Health. Princeton and Oxford: Princeton University Press.
[9] Kirksey SE, Helmreich S. (2010) The Emergence of Multispecies Ethnography. Cultural Anthropology 25(4):545-576
[10] Landecker H. (2015) Antibiotic Resistance and the Biology of History. Body & Society doi: 10.1177/1357034X14561341.

We included small-scale surveys of medicine outlets, farms and residents to understand distributions of antibiotic availability and use. We relied on multiple sources of documentary material including mainstream and social media, policy documents and national and international health archives. For each case, we sought to follow antibiotics through different dimensions:

- Ethnography of practice, making legible what has become common sense and its consequences
- Ethnography of connections, making visible the forms and nature of relations
- Ethnography of discourses, making metaphors, imaginaries and histories apparent

After a period of scoping in each country, in which we collaborated with a range of scientific, policy and practitioner stakeholders to explore priorities for AMR and antibiotic concerns, we selected cases to represent a range of scenarios. Taking seriously concerns that situate AMR as a One Health problem, we chose to study both human and non-human use of antibiotics.

AMIS Case Studies

Uganda	**Thailand**
Health care facilities (Tororo) Rural residents with small-scale agriculture (Tororo) Peri-urban industrializing pig and poultry farms (Wakiso) Urban informal settlement (Kampala)	Health care facilities (Ratchaburi province) Hospitals and homes – bedridden patients (Nakhon Pathom) Pharmacies and drug systems (Nakhon Pathom) Migrants (Tak province; Bangkok) Traditional medicine (Multiple locations) Pig farms (Multiple locations) Orange orchards (Multiple locations)

Each case study involved its own sets of methods, in line with the focus of the case. Although all could be described as 'multi-sited' in terms of locating particularities of practice in wider world system, some cases achieved this more through following the stories of antibiotics and their entanglements through archival and online materials, whilst other cases involved 'following' through multiple physical sites across a country. We maintained a comparative analytical lens, comparing insights between cases – including between countries – which spurred new lines of inquiry within other cases. At a meta level, our analyses combined to form a more global ethnographic project that followed antibiotics across multiple stages. Further reflections on the development of the 'following method' were included as a commentary on our website, as a chapter in the Thai book (see chapter summaries at the end of this report) and in the Thai MoPH film (see 'Research Outputs').

In each of the cases, AMIS team members spent time feeding back interim findings, through individual or group dialogues, which served both as an ethical practice in explaining the research and its outputs, as well as a platform for directing next stages of the research and analysis processes.

The AMIS team, although primarily anthropological in expertise, drew from expertise from other disciplines in the design of the research as well as the analysis. This included clinical and pharmacological expertise as well as collaborations with historians.

[11] Marcus, G. E. (1995). "Ethnography in/of the World System: The Emergence of Multi-Sited Ethnography." Annual Review of Anthropology 24(1): 95-117.
[12] Burawoy M, Blum JA, George S, Gille Z, Thayer M. Global ethnography: Forces, connections, and imaginations in a postmodern world. Univ of California Press; 2000.

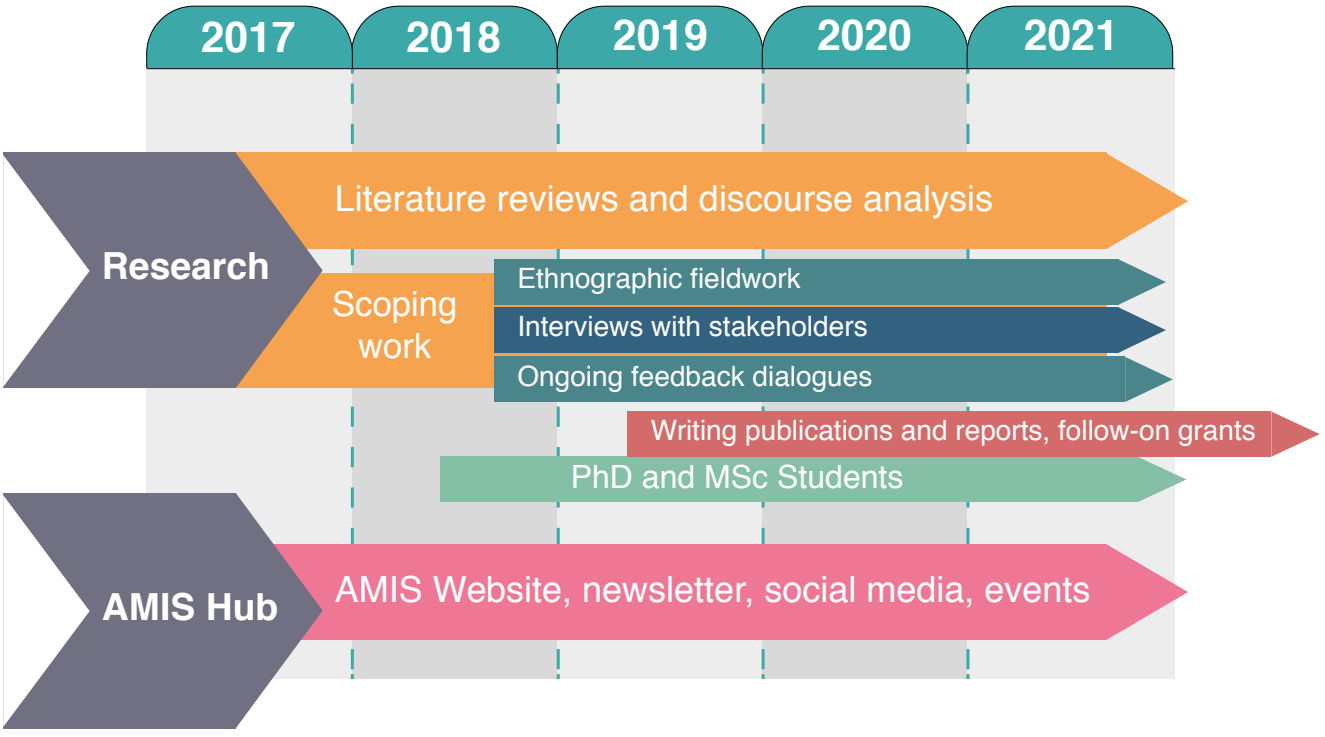
Ethical approvals

Before initiating fieldwork, study protocols were composed and submitted as part of ethics applications to LSHTM Ethics Committee for Uganda (ref: 15244/RR/10542) and Thailand (ref: 15481/RR/10212); alongside consent forms, information sheets and award letters for favourable awards from ethics reviews in Thailand (via Mahidol University Social Science International Review Board and Ministry of Public health) and Uganda (Ethics Committee of the Institute of the Development of Human Research Protections). Favourable reviews were granted by LSHTM Ethics Committee in May 2018 and June 2018 for Uganda and Thailand, respectively.

Timeline

The research teams in Uganda and Thailand worked together with the UK team in year one of the programme to undertake their research scoping and preparation. This included deciding on areas of focus, and ethnographic and theoretical approaches. In years two and three, the teams conducted fieldwork across numerous sites, with regular collaborative online meetings between sites. These were complemented by field visits from the UK team that focused on drawing out the key themes and findings arising from the fieldwork together.

Years three and four centred around the analysis of ethnographic data, sharing and refining initial findings through engagement with participants and local stakeholders. The final phase of the project involved drafting papers and sharing the key findings and messages arising from the research for publication in multiple forms including meetings, films, briefs and peer-reviewed journals. Despite the COVID-19 pandemic, a number of dissemination events were also possible, often online.



UGANDA STUDIES

In Uganda, we conducted research across three interconnected field sites: 1) chicken and pig farms in suburban Kampala; 2) a large informal settlement in downtown Kampala; and 3) within rural Tororo. The research began using 'drug bag' surveys[13], and then took a long-term ethnographic approach using a combination of participant observation and semi-structured interviews. The team attended to antibiotics uses in every day experiences of consumption, precarity, risk, and protection in various settings. The AMIS Uganda team worked closely with their local advisory committee and continue to contribute to emerging antimicrobial policies in Uganda.

IDRC UGANDA:

The fieldwork in Uganda conducted in Wakiso, Kampala and Tororo included:

565
survey interviews conducted across all sites

60
weeks of participant observation across the all sites

52
interviews completed

123
people engaged in participant dialogues

The team have also drawn on newspaper articles and Facebook threads to inform them on ongoing discourses surrounding antimicrobial use in the general public and amongst policy makers. These materials have been used to highlight specific concerns in Uganda to policy makers and other key stakeholders.

As part of the fieldwork, the team also reviewed the existing literature on antimicrobial use in Uganda. These papers have been reviewed as part of the weekly anthropology of AMR reading group that ran from October 2017 to February 2018 and the monthly AMIS empirical calls. These discussions aided familiarisation with anthropological literature relevant to AMR and enhanced critical writing skills. Extensive literature reviews have also been conducted as part of the team's Masters and PhD studies during this time.

[13] Dixon J, MacPherson E, Manyau S, Nayiga S, Khine Zaw Y, Kayendeke M, Nabirye C. Denyer Willis L, de Lima Hutchison C, Chandler CIR (2019) The 'Drug Bag' method: lessons from anthropological studies of antibiotic use in Africa and South-East Asia. Glob Health Action 12(1) 1639388

THAILAND STUDIES

In Thailand, the main body of fieldwork carried out by the MU team was concerned with care and bedridden patients (including antibiotic use), and understanding the availability and accessibility to antibiotics. This work has built on Dr Luechai's previous research into pharmaceutical uses in communities and his department's long-standing engagement in the Provinces near their Mahidol campus. Similarly, the MOPH team have built on Professor Komatra's long standing anthropological and policy interest in pharmaceuticals, health care and risk in Thailand. The MoPH team explored the roles of antibiotics in Mandarin orchards and pig production. Within health care, they investigated the implementation of the Antibiotic Smart Use guidelines at the health clinic level and continued tuberculosis related work in hospital settings. Both MU and MOPH, have drawn on their strategic positions in government and national universities to attend, and participate in, national AMR committees, workshops and conferences, as a means of both contributing to - and understanding - AMR policies and science in Thailand.

MAHIDOL UNIVERSITY, THAILAND

The Mahidol team completed ethnographic fieldwork in drugs stores, hospitals and households. Their work had a particular focus on bedridden patients, alongside interviews with teens and workers to understand how antibiotics are being used in these different settings. The fieldwork was conducted in Sampharn district, Nakhonpathom, between August 2018 to November 2020 Fieldwork related activities included:

47
stakeholders interviewed

58
healthcare staff, relatives, patients interviewed

95
household surveyed

27
bedridden patients observed in the community, health centre and hospital

3
focus groups discussions with 21 health care volunteers and local adult residents

2
pharmacies observed

MINISTRY OF PUBLIC HEALTH, THAILAND

The MoPH team took a multi-sited approach to their ethnographic fieldwork in Bangkok, Chiang Mai, Phrae, Sukhothai, Ratchaburi, Samut Sakhon and Tak provinces. The work had a particular focus on antibiotics in different sectors: agriculture, health practitioners, and government bodies. The team conducted interviews and observation in pig farms, local health centres, citrus orchards, government ministries, universities, communities and hospitals between September 2018 to June 2020. Fieldwork related activities included:

35
weeks of observation

53
interviews conducted

The team used materials from news articles, magazine articles, Facebook pages and twitter feeds to inform their ongoing review of how antibiotics are used in society.

Cross-country collaborations

Monthly AMIS Theory and Empirical Calls

For the first two years of the project, the AMIS study teams met virtually (initially via Skype, and later via Zoom). The aim of these calls was to build a shared understanding of contemporary anthropological theory across the study teams. This enabled a collective response to AMIS's interest in providing 'Fresh perspectives on Antimicrobials in Society". The calls provided a platform for AMIS study members to:

- explore the relevance of anthropological concepts with relation to one others' fieldwork
- initiate conversations across field sites and topics

In November 2018, these calls transitioned from a theoretical focus towards discussing empirical work, with team members sharing sections of their field notes for discussion with the wider team. The calls provided opportunities for raising questions, identifying new directions for fieldwork, developing interpretations and discussing relevant literature and resonances across field sites. These calls subsequently moved on to discussing draft papers and the dissemination of findings.

Together, the theory and empirical calls provided an important platform for constructing collaborative responses to AMIS's project objectives, as well as supporting each other in our fieldwork, analysis and writing.

Anthropology of AMR writing sessions

In 2019, the AMIS team based at LSHTM initiated the 'Anthropology of AMR' writing sessions. These sessions were developed to i) share insights from other anthropological research projects on AMR and beyond and ii) to learn from senior academics, particularly regarding developing and publishing a research article. These sessions covered a number of topics including writing styles, working collaboratively, promoting your research and conducting literature reviews. The sessions also included presentations from PhD students on their work within AMR in a number of settings. This provided the AMIS team with opportunities to reflect on their own work and build key skills for their future academic careers.

Cross site visits

Ethnography was an essential part of the empirical AMIS work and comparison – in part by thinking across fieldsites - formed a valuable and significant component of this work. , Tre This necessitated careful attention to the logistics of working and thinking collaboratively.. To facilitate these comparisons, in 2018 additional funding for cross-site visits was successfully applied for. This enabled the research team in Uganda to visit Thailand, and the Thai research teams to visit Uganda.. Although each visit was only one week long, they, greatly facilitated relating, thinking, and building theory together in novel and collaborative ways between sites. Building these 'South-South' connections is a hallmark of this ethnographic project, which strove to be genuinely collaborative, transnational and interdisciplinary. In addition to enriching research finding, it contributes to the ongoing larger intellectual project of reimagining what kinds of anthropology, ways of knowing, and doing ethnography are possible in the field of global health research. A short commentary piece on the cross-site visits can be accessed here: https://www.antimicrobialsinsociety.org/commentary/comparison-and-collaboration-how-can-get-on-with-doing-things-differently-some-initial-chat-ideas/.

Findings

Our research revealed how antibiotics are used in humans and in farming in Uganda and Thailand. Through our ethnographic fieldwork we unfolded multiple ways in which our societies are intertwined with antibiotics.

In Uganda, we learned: (a) how in an urban informal settlement with frequent flooding, lack of access to toilets and clean water, antibiotics are used very frequently to tackle symptoms such as diarrhoea that have become a part of everyday life; (b) how pig and poultry farmers in peri-urban areas characterised by rapid growth in meat production relied on antibiotics to help to protect their entrepreneurial investments; (c) how in rural eastern Uganda antibiotics are used to tolerate lingering ill-health and to continue to take up passing opportunities by a range of local, national and international actors.

In Thailand, we learned: (a) how antimicrobial resistance amplifies vulnerability in peri-urban contexts and challenges of containment between homes and hospital wards; (b) of the need to refocus onto care, rather than patients' compliance to the anti-TB treatment plans, especially in marginalized migrant populations; (c) of the unintended consequences of AMR policy to reduce antibiotic use by front-line health care practices; (d) of the reliance in orange orchards on antibiotics to save crops and the lack of alternatives for achieving undamaged citrus yields.

Across these projects key themes emerged around the ways that antibiotics had become woven into not only the performance of biomedicine but the architecture of what has become possible and expected of bodies – human and animal – and of societies more broadly. Across the AMIS programme, we adopted the idea that antibiotics are themselves infrastructural. This enabled us to see and follow the connections that antibiotics create, enabling us to decentre human behaviour and agency at the heart of usage, and allowing us to render visible, legible, tangible, those taken-for-granted dimensions of health care, labour, architecture, food production, that we have come to understand are shaped around antibiotics. In essence, we found that antibiotics have brought into being modern medicine, modern agriculture and modern living in ways that have gone unnoticed for the past half century. In their everyday uses, we found antibiotics were taking on multiple roles, for example:

- Antibiotics as protection
- Antibiotics as hygiene
- Antibiotics as opportunity
- Antibiotics as modernity
- Antibiotics as vulnerable
- Antibiotics as metrics
- Antibiotics as insurance

These multiple ways in which antibiotics have become folded-in to our ways of life across different places and spaces demonstrates the intractable nature of the problem of reducing our usage of these substances. And yet, this imperative remains to address this question: if we are to live in a world without widespread access to effective antibiotics, how best can we prepare? We explored a series of counterfactuals to antibiotics. We sought out cases where reliance on antibiotics had been reduced: genetically modified pigs, herbal medicines, organic oranges. Rather than imagine these cases as alternatives to antibiotics, which could be switched in place of these substances, our findings emphasise the interwoven nature of antibiotics with the systems which they co-constitute. Counterfactuals presented the need to alter systems – of expectations, markets, measures, accountability. Critical were scale and tempo. Envisioning a world in which antibiotics are no longer infrastructural, where health care, agriculture, architecture is no longer organised around these substances, requires re-orientating the ways we care, produce and build. Securing people – around the globe – from AMR requires not only securing medicines or microbes from future risks, it requires addressing insecurities across multiple dimensions today.

Research outputs

Publications

Abstracts are available at the end of this report, including articles under review.

2018

DENYER WILLIS, L. & CHANDLER, C. I. R. (2018). Anthropology's contribution to AMR Control. AMR Control, 4, 114-118. http://resistancecontrol.info/wp-content/uploads/2018/05/104-08-chandler.pdf

DE LIMA HUTCHISON, C., KNIGHT, G., STABLER, R. & CHANDLER, C. I. R. (2018). The modern era must end: antibiotic resistance helps us rethink medicine and farming [Online]. London, UK: BMJ Available: https://blogs.bmj.com/bmj/2018/07/11/the-modern-era-must-end-antibiotic-resistance-helps-us-rethink-medicine-and-farming/

2019

CHANDLER, C. I. R. (2019). Current accounts of antimicrobial resistance: stabilisation, individualisation and antibiotics as infrastructure. Palgrave Commun, 5. https://doi.org/10.1057/s41599-019-0263-4

CHUENGSATIANSUP, K. & LIMSAWART, W. (2019). Tuberculosis in the borderlands: migrants, microbes and more-than-human borders. Palgrave Commun, 5. https://doi.org/10.1057/s41599-019-0239-4

DENYER WILLIS, L. & CHANDLER, C. (2019). Quick fix for care, productivity, hygiene and inequality: reframing the entrenched problem of antibiotic overuse. BMJ Glob Health, 4, e001590. https://doi.org/10.1136/bmjgh-2019-001590

DIXON, J., MACPHERSON, E., MANYAU, S., NAYIGA, S., KHINE ZAW, Y., KAYENDEKE, M., NABIRYE, C., DENYER WILLIS, L., DE LIMA HUTCHISON, C. & CHANDLER, C. I. R. (2019). The 'Drug Bag' method: lessons from anthropological studies of antibiotic use in Africa and South-East Asia. Glob Health Action, 12, 1639388. https://doi.org/10.1080/16549716.2019.1639388

2020

KIRCHHELLE, C., ATKINSON, P., BROOM, A., CHUENGSATIANSUP, K., FERREIRA, J. P., FORTANE, N., FROST, I., GRADMANN, C., HINCHLIFFE, S., HOFFMAN, S. J., LEZAUN, J., NAYIGA, S., OUTTERSON, K., PODOLSKY, S. H., RAYMOND, S., ROBERTS, A. P., SINGER, A. C., SO, A. D., SRINGERNYUANG, L., TAYLER, E., ROGERS VAN KATWYK, S. & CHANDLER, C. I. R. (2020). Setting the standard: multidisciplinary hallmarks for structural, equitable and tracked antibiotic policy. BMJ Glob Health, 5, e003091. https://doi.org/10.1136/bmjgh-2020-003091

CHAWRAINGERN, S. (2020). Anthropology and Microbes. Thammasat Journal 39(2), 129-166.

MINSSEN, T., OUTTERSON, K., ROGERS VAN KATWYK, S., BATISTA, P. H. D., CHANDLER, C. I. R., CIABUSCHI, F., HARBARTH, S., KESSELHEIM, A. S., LAXMINARAYAN, R., LIDDELL, K., OSTERHOLM, M. T., PRICE, L. & HOFFMAN, S. J. (2020) Social, cultural and economic aspects of antimicrobial resistance. Bull World Health Organ, 98, 823-823A. https://doi.org/10.2471/BLT.20.275875

NAYIGA, S., KAYENDEKE, M., NABIRYE, C., WILLIS, L. D., CHANDLER, C. I. R. & STAEDKE, S. G. (2020). Use of antibiotics to treat humans and animals in Uganda: a cross-sectional survey of households and farmers in rural, urban and peri-urban settings. JAC-Antimicrobial Resistance, 2. https://doi.org/10.1093/jacamr/dlaa082

NAYIGA, S., NABIRYE, C., KAYENDEKE, M. & STAEDKE, S. G. (2020). Hunger will kill us before the coronavirus does! [Online]. London, UK: Social Science in Humanitarian Action Platform. Available at: https://www.socialscienceinaction.org/resources/hunger-will-kill-us-coronavirus/

2021

GLOVER, R., KNIGHT, G. M. & CHANDLER, C. I. R. (2021). Antimicrobial resistance at the G7. BMJ, 373, n1417. https://doi.org/10.1136/bmj.n1417

TOMPSON, A. C. & CHANDLER, C. I. R. 2021. Addressing antibiotic use: insights from social science around the world, London, UK, London School of Hygiene & Tropical Medicine. https://doi.org/10.17037/PUBS.04659562

CHUENGSATAINSUP, K., SRINGERNYAUNG, L. (Eds) (2021). Anti-Microbial Resistance: Anthropology of Antimicrobial Medicines. Princess Maha Chakri Sirindhorn Anthropology Centre Press. https://www.sac.or.th/main/en/publication/index

Archived data

The AMIS Programme has been committed to sharing data as set out in our original research proposal and in line with ESRC expectations. We have shared anonymised transcripts, field note summaries and survey data, where participants gave us consent to do so. We have not shared raw field notes due to the risk of breaching confidentiality.

UK Data Service archive

The AMIS teams' data are deposited, with accompanying materials, in the ReShare archive of the UK Data Service (UKDS), funded by the Economic and Social Research Council. Each AMIS team deposited their materials as separate projects, then linked by the UKDS and searchable under the overarching AMIS project title. The archive for each team includes three folders: 1) Data folder containing qualitative and quantitative data - including interview transcripts, contact summaries, participant feedback dialogues, and medicines surveys 2) Supporting documents – including example consent forms, information sheets, topic guides, and survey manuals 3) Additional documents – including a ReadMe file describing the data stored in the archive, a data list detailing the types, date, and location of data collection, a naming convention document, a methodology and overview document, and a list of publications resulting from the research. The archive is accessible online through the UKDS website: https://www.ukdataservice.ac.uk/

AMIS Archive Project in Thailand

AMIS Thailand teams have jointly established an archive of the AMIS project's materials in the Society and Health Institute's (SHI) research data center, supported by the AMIS project. This data center is a part of SHI's plan to make "AMIS" a multidisciplinary research space, with SHI serving as its national and regional hub. Its aim being to continue the legacy of AMIS and further support those engaged with policy, practice and research to focus antimicrobial resistance and antibiotic use "in society." The AMIS archive includes five categories of material from the project: research management, research processes, research data, outputs, and key references. This archive will be available and accessible online at the National Archive of Public Health, Thailand: https://www.naph.or.th/

Online resources

Essential readings list

To support others – researchers and interested practitioners – in locating social research relevant to antibiotics, we created a curated 'essential readings list' on our AMIS website. Whilst it is widely recognised that social science has much to offer in addressing AMR, sometimes the relevant research is hard to find if it is in books and journals that are not searchable with scientific databases such as pubmed. We therefore focused on key publications that can be useful in thinking about antibiotics, and antimicrobial resistance, that may be less easy to find. On the website, we present summaries of, and links to, relevant books and journal articles, for what we considered to be essential reading on the topic of antimicrobials in society. We also developed thematic summaries of how these publications link together in bodies of work, narrated on our 'Themes' section of the website.

As well as our featured 'essential readings', we assembled a database of social science outputs that have specifically addressed antibiotic use. This searchable database forms the Appendix of the 'Addressing Antibiotic Use' report and is also found on our AMIS Hub website.

Antibiotic Use Literature

In addition to key social science literature relevant to antibiotics and AMR, we recognised a need for up-to-date estimates and outputs on the topic of antibiotic use (ABU) around the world. The ABU Tracker was developed as a live database of research publications reporting on non-hospital antibiotic consumption and use. The Tracker provided an evidence-base for analysis of global trends, including comparison across countries, locations, and human and animal sectors over time, informing optimization of antimicrobial consumption and use in different sets. The primary audience for the Tracker was researchers and program implementers who could access information quickly on current and previous antibiotic use, to inform analyses of how to understand and manage antibiotic use, relations with antibiotic resistance, and assessment of the impact of program around community-level antibiotic use. The database included human and animal studies from inception to 2021 that described empirical data specifying a measure of use in terms of volume and or/types of antibiotics. Users are able to select filters for the database using drop-down tabs at the top of the excel sheet according to the following categories: Author(s); Title; Journal; Year of publication; Countries data collected in; Population (e.g., Animal/human/aquaculture). The tracker was made publicly available on the AMIS website in early 2021: https://antimicrobialsinsociety.org/antimicrobial-use-tracker/

Author(s)	Title	Journal	Year of Publication	Countries data collected in	Population e.g. Animal/human/Acquaculture
Aabenhus, Rune: Han	Clinical indications for antibiotic use in	Scandinavian Journal of I	2017	Denmark	Human
Abdollahiasl, Akbar: I	Patterns of antibiotic consumption in Ir	International journal of a	2011	Iran	Human
Abilova, Vafa: Kurdi, .	Ongoing initiatives in Azerbaijan to imp	Expert Review of Anti-In	2018	Azerbaijan	Human
Achermann, R.: Suter	Antibiotic use in adult outpatients in Sw	Clinical Microbiology and	2011	Switzerland	Human
Adesokan, Hezekiah I	Pattern of antimicrobial usage in livest	Onderstepoort Journal of	2015	Nigeria	Animal
Adriaenssens, Niels: (	European Surveillance of Antimicrobial	Journal of Antimicrobial	2011	Europe	Human
Adriaenssens, Niels: (	European Surveillance of Antimicrobial	Journal of Antimicrobial	2011	Europe	Human
Adriaenssens, Niels: (	European Surveillance of Antimicrobial	Journal of Antimicrobial	2011	Europe	Human
Agunos, Agnes: Gow,	Antimicrobial Use and Antimicrobial Re	Frontiers in Veterinary S	2019	Canada	Animal
Agunos, Agnes: Leger	Antimicrobial use surveillance in broiler	Plos One	2017	Canada	Animal
Al Khaja, Khalid A. J.:	Rational use of antimicrobials in infant	Journal of Tropical Pedia	2006	Bahrain	Human
Al-Shibani, Nouf: Har	Knowledge, attitude and practice of ant	Saudi Medical Journal	2017	Saudi Arabia	Human
Albrecht, Jennifer S.:	A Nationwide Analysis of Antibiotic Use	Journal of Pain and Symp	2013	United States of America	Human
Alhaji, Nma Bida: Ali	Survey on antimicrobial usage in local d	Plos One	2019	Nigeria	Animal

Videos

In order to reach a range of audiences, a need amplified by the travel restrictions during the Covid-19 pandemic, the AMIS teams produced a series of short films to describe the research.

AMIS Programme

AMIS Programme and Mentors. (2017) How can Social Research address Antimicrobial Resistance?
https://www.youtube.com/watch?v=YEW7xhz_HA8

AMIS and FIEBRE team members. (2020) Antibiotic Use around the World – insights from the Anthropology of Antimicrobial Resistance Group. A written summary is provided in this commentary.
https://www.youtube.com/watch?v=Mhb9GwoNRQM

AMIS Uganda

Nayiga, Susan; Kayendeke, Miriam; Nabirye, Christine; Willis, Laurie Denyer; Staedke, Sarah G; Chandler, Clare IR; (2021) Antimicrobials in Society: A film about anthropological approaches to antibiotic use in East Africa. [Video] https://doi.org/10.17037/PUBS.04660795
https://www.youtube.com/watch?v=KyToiiv-MJk

Nayiga, Susan; Willis, Laurie Denyer; Staedke, Sarah G; Chandler, Clare IR; (2021) No medicine, no life: A film about everyday life and use of medicines in Eastern Uganda. [Video] https://doi.org/10.17037/PUBS.04660794
https://www.youtube.com/watch?v=ZhuXHCOm29Y

Nabirye, Christine; Willis, Laurie Denyer; Nayiga, Susan; Kayendeke, Miriam; Staedke, Sarah G; Chandler, Clare IR; (2021) Antibiotics as Hygiene: A film about antibiotic use in an urban informal settlement in Uganda. [Video]
https://doi.org/10.17037/PUBS.04660796
https://www.youtube.com/watch?v=3SR91R3cDrw

Kayendeke, Miriam; Willis, Laurie Denyer; Nayiga, Susan; Nabirye, Christine; Staedke, Sarah G; Chandler, Clare IR; (2021) Antibiotics as Protection: A film about antibiotic use in pig and poultry production in Uganda. [Video] https://doi.org/10.17037/PUBS.04660797 https://youtu.be/TEFe_hz7qNQ

AMIS Thailand

Chuengsatiansup, Komatra; Ajanakitti, Chutchon; Limsawart, Wirun; Chawraingern, Sittichoke; Urapeepathanapong, Thitima; Piyawong, Jutamas; (2021) Antimicrobials in Society (AMIS): When Anthropologists are Challenged by the 21st-Century World. [Video] https://doi.org/10.17037/PUBS.04661419 https://www.youtube.com/watch?v=tNgolwhzABo

Sringernyuang, Luechai; Poompruek, Panoopat; Whanpuch, Phakha; (2021) Antimicrobial Resistance, Urban Life in Thailand and Anthropological Research. [Video] https://doi.org/10.17037/PUBS.04661424 https://www.youtube.com/watch?v=l_ShNt1Kxak

Dissemination activity

A range of dissemination activities were undertaken by the AMIS teams, in particular focusing on reaching our messages to three communities: researchers, policy practitioners, and members of the public.

Policy Engagement

The inception meeting in 2017 included a focus on key audiences – individuals and organisations – who we expected to be interested in our findings and in a position to take action. The team developed a communications plan which listed out our key messages for different actors, which was updated over the course of the project.

Impact on policy. The findings have contributed to decision making through presentation at governmental AMR Coordinating Committees that are responsible for implementing national action plans (NAPs) in Uganda and Thailand. Members of the AMIS projects in Uganda and Thailand have been asked to join technical working groups for the AMR national action plans, including the design of the second NAP in Thailand and the implementation of the first NAP in Uganda. The findings and conceptual frameworks emerging from the AMIS programme have been fed into policy for a through participation in numerous committees at an international level including with the World Health Organisation and the Inter Agency Coordinating Group on AMR.

Impact on programmes. The AMIS research in Uganda and Thailand has been carried out in with collaborative relationships with local authorities. In Uganda, individuals with specific programmatic responsibilities in Kampala, in farming in Wakiso and in Tororo, have participated in two-way dialogues to shape the research and also to allow the research findings to influence programmatic decisions in relation to antibiotic stewardship and health care access. In Thailand, research in the peri-urban Om Yai sub-district, was carried out in conjunction with dialogues with local authorities, health care facility leadership and community leaders. The research increased awareness of the specific problems of the marginalised population affected by AMR in the area including access to health care, burden of diseases and the specific social determinants of health. This has led to programmatic initiatives to tackle these problems locally.

IDRC, Uganda

The IDRC team have attended 7 policy meeting in Uganda since the start of the project. The team hope to contribute to the implementation of the national action plan through their research and have identified particular objectives of the action plan in which their research can contribute, this include objectives on informing effective stewardship practices, strengthening the knowledge and evidence base of antimicrobial use and conducting local research on antimicrobial use patterns.

The team have engaged key stakeholders involved in policy through the advisory committee which include representatives from the ministry of agriculture, ministry of health and National drug authority. The team have presented at the antimicrobial stewardship, optimal access and use technical working group meeting in February 2019 and plan to develop policy briefs in 2021 as part of the dissemination process.

The IDRC team have also participated in the Uganda National AMR conference each year since the start of the project, which is attended by over 500 participants each year. At the first AMR conference in 2017 Susan Nayiga made a presentation in her plans for here research and Miriam Kayendeke and Christine Nabirye presented in 2018 from their findings from interviews conducted in Wakiso and Namuwongo. In November 2020 Susan Nayiga made a presentation as part of the lecture series organized by the Ministry of Health and Makerere University Pharmacy Department to commemorate the World Antimicrobial Awareness Week sharing key findings from the research and implications for addressing antibiotic use.

The AMIS Uganda 2021 dissemination activities with policy practitioners included: a presentation during the webinar series hosted by the Ministry of Health, department of pharmaceuticals and natural medicines under the session on antimicrobial stewardship. This reached about 40 individuals including people in policy positions nationally, sub-nationally and people doing work on AMR.

Mahidol University, Thailand:

The AMIS team at Mahidol university worked closely with the MoPH team to ensure that their research findings impact AMR policy in Thailand. The team supported the development of a national communications strategy for AMR and attended workshops with the FDA on AMR research mapping and prioritization.

Dr Luechai was appointed as member of National Sub-Committee on Public Awareness Raising on AMR and ATB Rational use and attended regular meetings ensuring that AMIS research findings were reflected in the national policies on AMR awareness. Dr Luechai was also invited to be a member of the FDA's Think-Tank on research mapping in regard to the National Action Plan on AMR.

Through the research conducted by the team, dialogues were initiated (December 2019) with representatives of the local government and Sampran hospital staff (including the director of the hospital) to address questions AMR in primary care delivery. These discussions focused particularly on bedridden patients both at home and in the hospital wards, and improving practices of care to these patients.

Ministry of Public Health, Thailand

The team attended four key policy events, including meetings with district officials about the implementation of RDU measure in the province, events with the FDA board and attending events departments in the ministry.

The team discussed the implementation of RDU measures in the Surin province and had meetings with the head of consumer protection and public health pharmacy in this district. The team also had discussions with the FDA board about a strategic plan for encouraging public awareness about AMR and antimicrobial use following the national strategic plan on AMR.

The team supported the development of the 2019 national Survey on knowledge of antibiotics and awareness of antimicrobial resistance. The team was also a part of a working group to support this work and supported its analysis and write up of the 2017 results.

London School of Hygiene & Tropical Medicine, UK

The London team have been fortunate to be included in a number of policy fora in discussing antimicrobial resistance and have been able to feed in the questions and concerns arising in policy arenas to our research focus as well as to feed back our ongoing findings into these policy discussions. For example, engagement in annual meetings of the WHO's behaviour change consultations has enabled greater insights into the concerns around awareness raising at the global level and has provided the opportunity to locate concerns arising in our research in these discussions, such as the challenges of unintended consequences of AMR awareness raising. This engagement also enabled an add-on project funded by the WHO on awareness of AMR amongst health care professionals across 13 LMICs which ran over two years alongside the AMIS programme. This also led to invitations to participate in FAO and OIE activities and strengthened relationships with individuals running AMR in the tripartite agencies. Invitations for speaker events have snowballed into participation in numerous committees, workshops and speaker events which has increased visibility of our research and approach. Our influence can be seen in emerging policy oriented reports on AMR, for example in the World Bank's 2019 report on AMR builds on the idea of antibiotics as infrastructure, and the Chatham House 2019 report on AMR incorporates the idea of antibiotics as a quick fix, as well as the limitations of awareness raising interventions.

Researcher Engagement

The AMIS Thailand and Uganda projects attracted academics from a range of disciplines to journal clubs, workshops and conferences and provided MSc and PhD training opportunities.

IDRC, Uganda:

- The IDRC team have presented at a number of national and international conferences as part of the AMIS programme. The international conferences presented, include: the Social Science in AMR Research Symposium in London, the UK Global Challenges Research Fund International Workshop in Kathmandu,the Sociology of Health Symposium in Grand-Popo, Benin, the Chronic Living Conference organized by the University of Copenhagen, Denmark and the 5th International conference on responsible use of antibiotics in animals.

- During the Thai team visit in Uganda in February 2019, the IDRC team organized a seminar event at the Makerere University School of Public Health where Prof. Luechai Sringernyuang gave a lecture on 'Fresh Approaches to the study of antimicrobials in Society'. This seminar was attended by about 50 people including academic staff and students of Makerere University.

Mahidol University, Thailand:

- The Mahidol team hosted the AMIS Hub Thailand Seminar 2019 where Professor Clare gave a lecture on "Social Sciences: Understanding Antimicrobial Resistance in Society". The aim of the seminar was to exchange experience and fresh perspective on AMR between AMIS members, Thai advisory committee, Lecturers and PhD/MA students of Mahidol University.
- The Mahidol team attended many conference such as Sonar global, the Second National Forum on AMR, the Public Engagement on AMR in Thailand workshop, Thailand's World Antimicrobial Awareness Week and the Health Policy and Systems Research on
- Antimicrobial Resistance Network: HPSR-AMR to engage Thai researchers on AMR issue.
- The Mahidol team presented the part of key finding and methodology from AMIS project at the 13th National and International Conference on Humanities and Social Sciences that was held by Political Science Association of Kasetsart University, in 2021.
- The team participated in and help host the 14th Thai Humanities Research Forum "iHumanities: Technology, Health and Life" held on September to December, 2020 as part of the Faculty of Social Sciences and Humanities, Mahidol University. The main as was to provide a forum for exchanges across disciplines in the fields of Humanities and Social Science, particularly in the context of Science, Technology and Medicine on one hand, and that of the social impacts of science, technology and healthcare service on the other. The AMIS Thailand teams presented papers from their work in the AMIS project.
- 63 participant dialogues conducted/people engaged from meeting at Sampharn Hospital and training workshop on methodology, journal clubs, among team members and PhD/MA students of Mahidol University.

Ministry of Public Health, Thailand

- The MoPH team have been very active in attending conferences to engage with other researchers within the AMR field in Thailand. These events include large scale conferences such as the Prince Mahidol Award conference, meeting with other Thai research networks and attending high level meeting with the ministry of health and the Thai FDA.
- The team attended and presented a paper at the European Association of Social Anthropology (EASA) 2020: New anthropological horizons in and beyond Europe, Portugal (virtual conference).
- The team presented concepts, methodology and interim findings from the AMIS project at the Thailand 2nd Annual Conference on Anthropology and Sociology, Ubonrachatani University, Ubonratchatani province, in 2020.
- Other key events that members of the team presented and attend werethe Second National Forum on AMR 2020, Sonar-Global OPERATE-SOC curriculum development 2020, and the AMR Dialogues in Thailand kick-off meeting 2020.
- Approximately 90 people participated in dialogue events, including at advisory board meetings, Friday virtual research seminars, meeting at National Anthropology and Sociology conference at Ubon Ratchathani university, two public lectures at Thammasat University and pre-wrap up meeting.

Thai wrap-up event

The MoPH team and Mahidol university teams in collaboration with Princess Maha Chakri Sirindhorn Anthropology Center, organized a 1-day wrap-up event via Zoom and live broadcasting on Facebook AMIS page and YouTube. The day included 6 papers from the Thai teams, which shared their studies key findings, and they were accompanied by pre-recorded keynote by Professor Clare Chandler. The event was attended by 265 participants, including policymakers, health practitioners, social scientists. Recordings of the presentations have been viewed more than 1,900. The morning session can be watched back here and the afternoon session can be watched here. The Thai book on Anthropology of AMR, which collected essays of the AMIS Thailand researchers and translations from AMIS London, were distributed to 110 of the participants who attended the event.

Some of the public facing engagement activities the team had participated in include:

- The AMIS Thailand teams have set up a designated Facebook page to share ongoing work and articles on AMR.
- The AMIS project has also been cited in a news article in Thailand, the article writes about activities carried out as part of the cross- site visit to Bangkok in March 2019.
- The AMIS Uganda project has showcased their work in film form on national television and has shared their findings through newspaper articles.
- Members of the AMIS team in London have provided inputs into media articles and events on AMR including for the Telegraph, the Guardian and The Economist as well as on Sky Television on TRT World's Roundtable.
- Members of the AMIS team in London have participated in public engagement on AMR through events at the Science Museum and at the Hay Festival's 'How the Light Gets In' series.

Public engagement

The AMIS project also set out to engage with other audiences through social media and hosting public events. The AMIS twitter account was set up to promote the work of the AMIS team, including the team mentors, promote the work of social science research in AMR beyond "behaviour change", highlight developments in AMR news and share updates from events attended. Dedicated social media accounts for each country team has also been set up to share AMR news and engage with the public.

An AMIS YouTube channel has also been created to upload and store videos produced by AMIS programme team. The channel itself is primarily used to store videos that are embedded into the AMIS programme website.

The AMIS Team co-produced educational material on the anthropology of antibiotics for secondary school children around the world with Futurum Careers. The article to inspire students in medical anthropology and associated worksheet is distributed to teachers at >50,000 schools around the globe for use within their science curricula.

Participation at External Events:

Presentation at external events

The AMIS team members have been invited to contribute to a number of workshops, conferences and events to promote fresh perspectives on AMR from a social science view, engaging with a range of different research disciplines, policy actors and practitioners from around the world. This has enabled the dissemination of AMIS research findings to a wide audience.

2017

- CID CRASSH AMR Event, Cambridge, UK
- AMR Cross Council Event, London
- Gothenburg Ethics and Value conference, Gothenburg, Sweden
- WHO AMR Behaviour Change Consultation 1, Geneva, Switzerland
- LIDC Podcast, London, UK

2018

- DiaDev Edinburgh Event, Edinburgh, UK
- Prince Mahidol Award Conference, Bangkok, Thailand
- UK Parliament, London, UK
- National Audit Office Seminar London, UK
- Wellcome Seed Award event, London, UK
- Superbugs book launch, London, UK
- Hay Festival, Hay on Wye, UK
- WHO AMR Behaviour Change Consultation 2, Geneva, Switzerland
- Future AMR policy (University of Exeter), London, UK
- Congrès d'automne de la SSMIG, Lausanne, Switzerland
- Antibiotic Use and Human Behaviour - Uppsala University, Uppsala, Sweden
- EBRD and Aviva Investors joint AMR event, London, UK
- Cross-disciplinary Workshop Work in the field of One Health, Uppsala, Sweden
- Leicester Optimising Antibiotic Use, Leicester, UK
- Fleming Fund Country Meetings, Dar es Salaam, Tanzania
- AAA Annual Conference, San Jose, USA
- Call to Action on AMR, Accra, Ghana
- Interagency Coordination Group (IACG), Accra, Ghana
- Colfe's School, London, UK

2019

- Department for Trade roundtable , London UK
- Scoping round table on AMR - The Royal Society, London, UK
- The Economist AMR Summit, London, UK
- International conference "Antibiotics addicts, Paris, France
- AMR Workshop Regulating Resistance, Resisting Regulation, Bristol, UK

2020

- EASA 2020
- AICG Advisory board
- UK Parliament AMR Reception
- MRF National PhD training programme
- Operate-soc AMR: proposal for consultative workshop
- Chemonics/Economist Intelligence Unit Panel on AMR
- SHI/AMIS Friday Seminar: Draft paper on The roles of drugs and drug-resistant TB in migrant workers
- SHI/AMIS Friday Seminar: Draft paper on Counterfactual
- Thailand's 2nd Annual Conference on Anthropology and Sociology,
- AMIS Thailand Preliminary Results Dissemination Workshop
- Use of antibiotics to treat humans and animals in Uganda' at World antimicrobial awareness week virtual seminar series
- The 14th Thai Humanities Research Forum "iHumanities: Technology, Health and Life
- Public Engagement on AMR in Thailand kick-off Meeting (in conjunction with Thailand AWW)
- Sonar-Global Network Bangkok Regional hub meeting: Invitation to contribute to a course on the social dimensions of AMR

2021

- Chronic living conference
- "Public Engagement on AMR in Thailand" Virtual Stakeholder Workshop
- the National Coordination Center for Human Health on the review the status of the AMR National Action Plan Implementation
- The 13th National and International Conference on Humanities and Social Sciences
- The National Antimicrobial Stewardship, Optimal Access and Use of Antimicrobials (ASO) technical working committee
- My Life in AMR' for the Medical Research Foundation PhD programme
- Anthropology of AMR' for Exeter university
- Antimicrobial Resistance and Socio-Cultural Dimensions of Drugs: Findings and Contributions from AMIS
- Webinar series- Antimicrobial stewardship in Medicines Retail Sector and communities
- 5th International conference on responsible use of antibiotics in animals

AMIS Hub

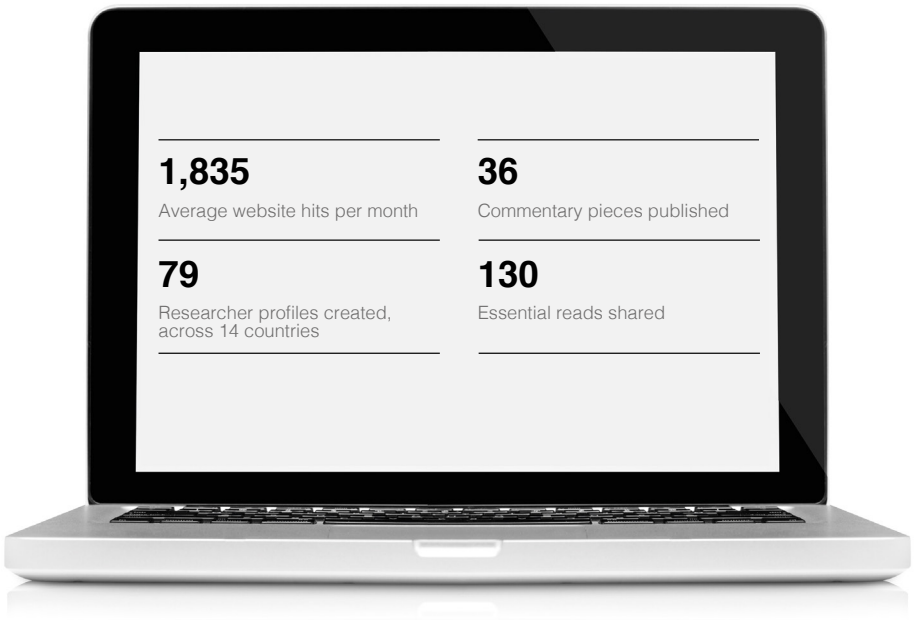
The AMIS programme intended to promote fresh approaches to AMR as one of its key commitments. We aimed to support the development of a critical mass of researchers applying fresh perspectives to the topic of antimicrobials in society, through cross-disciplinary networking, training and mentorship.

The AMIS Hub comprised a number of resources and activities that aimed to promote the contributions of conceptually rich social research applied to AMR. These were designed to act as a resource for policy makers and a guide for researchers who may be unfamiliar with others' social science approaches. These activities were designed to support a wider community of social science research on AMR, beyond our empirical research projects, AMIS Uganda and AMIS Thailand.

To achieve this, the AMIS Hub website, regular newsletter and in-person and online events were created to provide a platform for interaction to anyone interested in the topic, to provide access to insights from established scholars with similar research concerns, and to create a platform to promote some of the high quality social research being undertaken to address AMR.

AMIS Website

The AMIS website – www.antimicrobialsinsociety.org – was developed in 2017, and officially launched in November 2017. The site includes an introduction to what social science can offer to studies of AMR, four themes that the AMIS team brought together literature under, a People & Projects page that showcases the work of social scientists working on AMR, an 'Essential Reading' library, an Events page to archive materials from relevant AMR social science events, and a Commentary section that showcases fieldnotes and blogs, developed as a platform for disseminating early ideas.



We have posted 36 commentary pieces, written by researchers from the project and from external institutions including posts on field notes, activities attended and comments on relevant literature published. These updates are shared on twitter and generate significant engagement. We were delighted to be able to film members of the AMIS team as well as our AMIS mentors at our inception meeting in 2017 and the videos, which underscored the importance of fresh perspectives on AMR, were edited and pulled together into short films posted across the AMIS website.

It's been incredibly enlightening and exposed me to so much work I would otherwise not have known about

- Bharat Venkat, Assistant Professor, Institute for Society & Genetics, University of California Los Angeles (UCLA), USA

My students are interested in AMR and I've been sending them to the AMIS Hub – especially the reading list. Great resource!"

- Dr Deborah DiLiberto, Assistant Professor in Global Health, McMaster University, Canada

A number of our team have been stimulated by the work of your dept and the material on the website. The AMIS website is a valued hub not only for social scientists engaging with the challenges of antimicrobial resistance, but also for researchers approaching the issue through arts and humanities perspectives.

- Colin MacDuff, Senior Research Fellow, Glasgow School of Art.

The AMIS Hub was a truly great and community-building thing" Dr Claas Kirchhelle, Lecturer in History of Medicine, University College Dublin

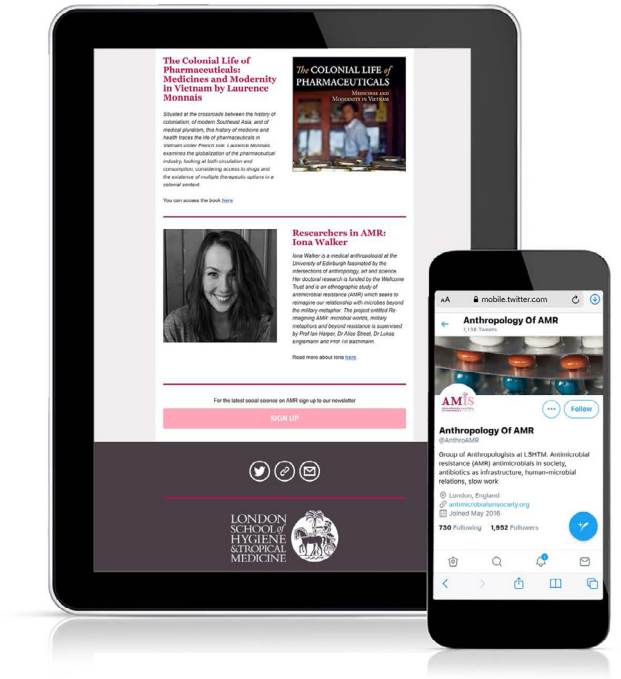
- Dr Claas Kirchhelle, Lecturer in History of Medicine, University College Dublin

AMIS Newsletter

An AMIS newsletter has been disseminated on approximately a monthly basis since December 2017. In total the team have produced over 30 newsletters, circulated to 343 regular subscribers from academic, policy and programmatic backgrounds. Of regular subscribers, 45% are highly engaged and regularly access the articles and opportunities posted in the newsletter. The newsletter has been used to both disseminate findings and activities from AMIS and to support and promote other researchers working on AMR in the social sciences. The newsletter is disseminated via Twitter which gives the AMIS team the opportunity to interact with other researchers about upcoming events and recent publications.

AMIS Social Media

The AMIS London team have been running the AMIS twitter account with over 2000 followers. Through this account the team have engaged with other researchers and been able to share AMIS materials, including publications. The posts have had over 1587 retweets and 3514 likes over the time of the project. We launched the #SocSciAMR hashtag at our 2018 symposium and continue to use it to promote and connect social research on AMR.



343
Regular subscribers to newsletter

30
Newsletters published

2000+
Twitter followers

AMIS Events:

The AMIS programme hosted a series of events to promote the use of fresh perspectives in the social science of AMR.

Third man Film and Website Launch – 2017

This event, hosted in LSHTM's John Snow auditorium with over 200 attendees, showed the classic 1949 film The Third Man with a panel discussion and launch of the AMIS Website. Written by Graham Greene and directed by Carol Reed, and starting Joseph Cotton and Orson Welles, the film is widely considered the best British film of the 20th Century. The plot, set in postwar Vienna, Australia, deals with the use of antibiotics and how their limited availability demanded high prices and dubious use. After showing the film, we hosted a panel discussion to discuss (a) how the film depicts the roles of antimicrobials in society after they had so recently been mass-produced; (b) how this has changed today; and (c) how the roles of antimicrobials has spread and gained traction across the world. The panel was chaired by Madlen Davies, health and science reporter at the Bureau of Investigative Journalism, and included Dr Laura Shallcross, NIHR Clinician Scientist at UCL, Ross Macfarlane, Research Development Lead at the Wellcome Collection, and AMIS PI Clare Chandler.

Symposium – 2018

Additional funding was sought to host AMR social science symposium in September 2018. The symposium brought together leading social scientists working on AMR globally, both to present and to attend. The aim of the symposium was to generate community, engagement, scholarship, and networking opportunities for those working in the same areas. 40 participants were from outside of the UK, including four countries in Africa, four in Asia, six in Europe as well as participants from Australia and the United States. Disciplines represented included anthropologists, sociologists, historians, geographers, artists, philosophers, science and technology studies scholars and even environmental scientists. Formulated as a work-in-progress event, we heard from sixteen presenters across four thematic panels, saw and discussed 18 poster presentations, and reflected on the state of the field through a keynote talk and final panel discussion. Recordings of the talks were made available as videos on the AMIS website, together with summaries of the proceedings. Participants were provided with an abstract book detailing both papers and poster presentations. The event was accompanied by a photography exhibition of an array of evocative images depicting antimicrobials in context from across the AMIS programme.

Hallmarks workshop – 2019

The AMIS team hosted a follow up workshop to the Symposium in March 2019, entitled 'Problems and Principles: Multidisciplinary Hallmarks for Addressing Global AMR'. This workshop built on the key outcomes of the autumn Symposium, bringing together scholars, funders, and decision-makers on antibiotic interventions and AMR. Participants discussed essential components of 'good' policies and used these to begin formulating a qualitative set of hallmarks to aid international policy-makers and academics working on AMR. This work continued through an online process resulting in the publication of a research article in BMJ Global Health, Setting the standard: multidisciplinary hallmarks for structural, equitable and tracked antibiotic policy.

Antimicrobials In Society Seminar – 2019

This seminar focussed on our ethnographic research in Thailand and Uganda, where we have been exploring the ways antibiotics are used in humans, animals and crops, and the reasons behind increasing use. The audience had the opportunity to hear snapshots from 12 field sites, introducing the social, economic and political reasons for increasing antibiotic use, along with insights into the science and policy of antibiotic use and AMR globally and locally. The audience was invited to pose questions for discussion and to consider the value of ethnographic research in prompting new insights for addressing AMR.
A video recording was made of the event.

AMIS Online Panel Series – 2020

The AMIS project organised four sessions to bring together key insights from recent social research studies from researchers at institutions all around the world into the questions of (a) why antibiotics are being used in the ways that they are, in different settings and (b) what social researchers propose should be done to address this. The first panel, chaired by Professor Clare Chandler, focused on the use of antibiotics in healthcare facilities. Panellists Dr Esmita Charani, Dr Paula Saukko, Dr Justin Dixon and Professor Alex Broom drew on social theory to unpick antibiotic use in their diverse research settings across Sudan, Malawi, Zimbabwe, Australia, India and the UK.

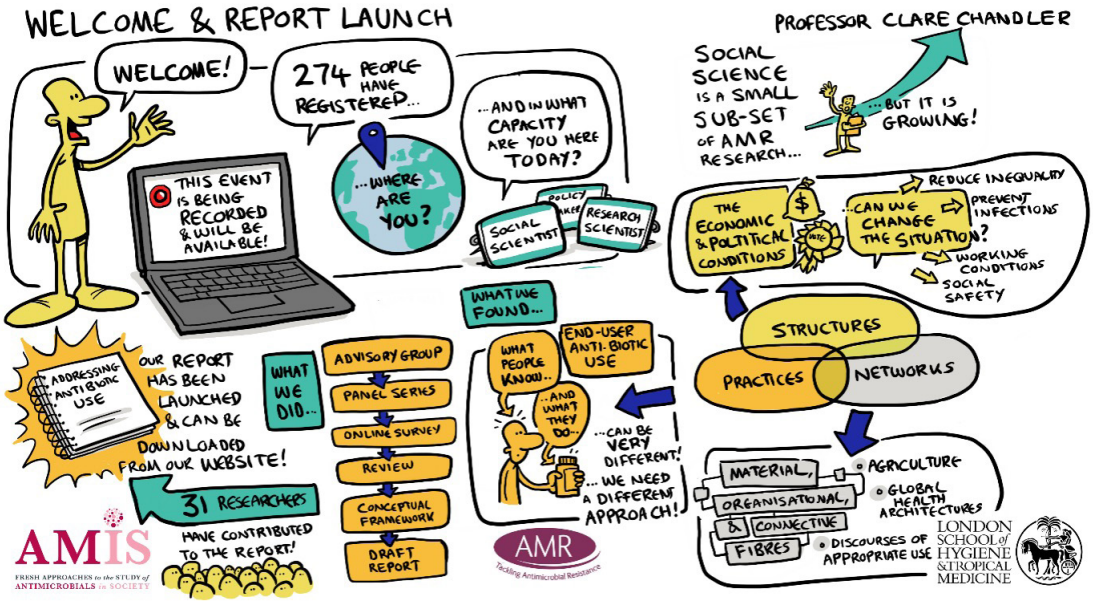
The second session of the AMIS panel series, chaired by Professor Helen Lambert, considered antibiotic use outside of formal healthcare facilities. Through their social research in Asia, Uganda and Australia, Dr Papreen Nahar, Dr Marco Haenssgen, Susan Nayiga and Dr Mark Davis illustrated how antibiotics move across public and private sectors with consumers, who have multiple social roles, turning to a range of healthcare providers and information sources.

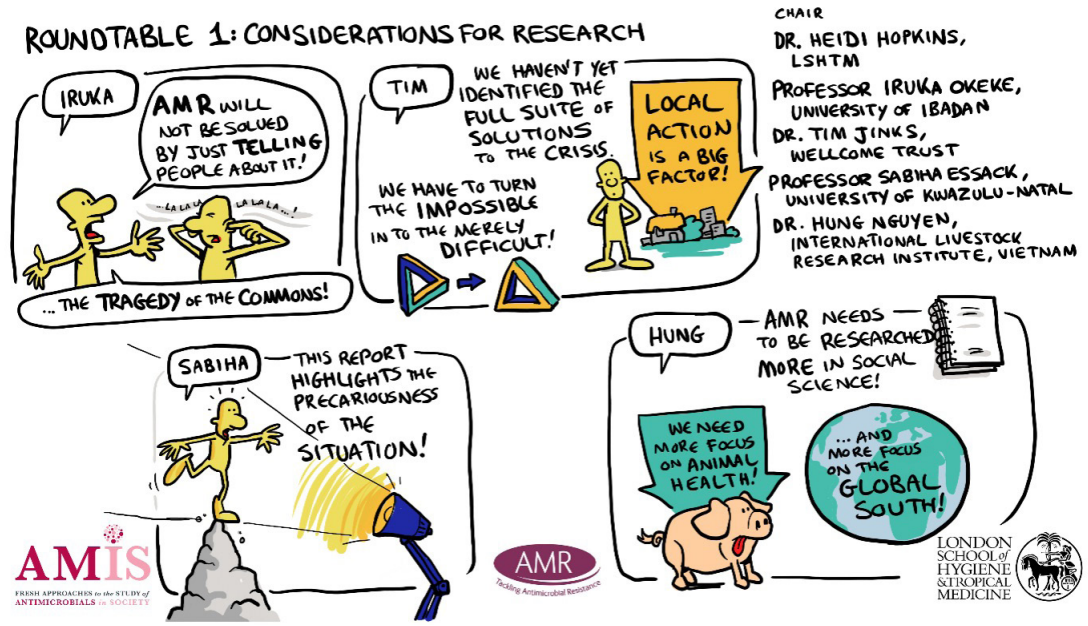
The third session of the AMIS panel series, chaired by Professor Clare Chandler, looked at how we might consider antibiotics beyond humans. Professor Steve Hinchliffe, Dr Claas Kirchhelle, Dr Salla Sariola and Rijul Kochhar drew on their research conducted in Bangladesh, India, West Africa, Georgia and the UK to reflect upon food production and attended to the microbiopolitics of therapy, including the potential ‘techno scientific salvation’ offered by phage.

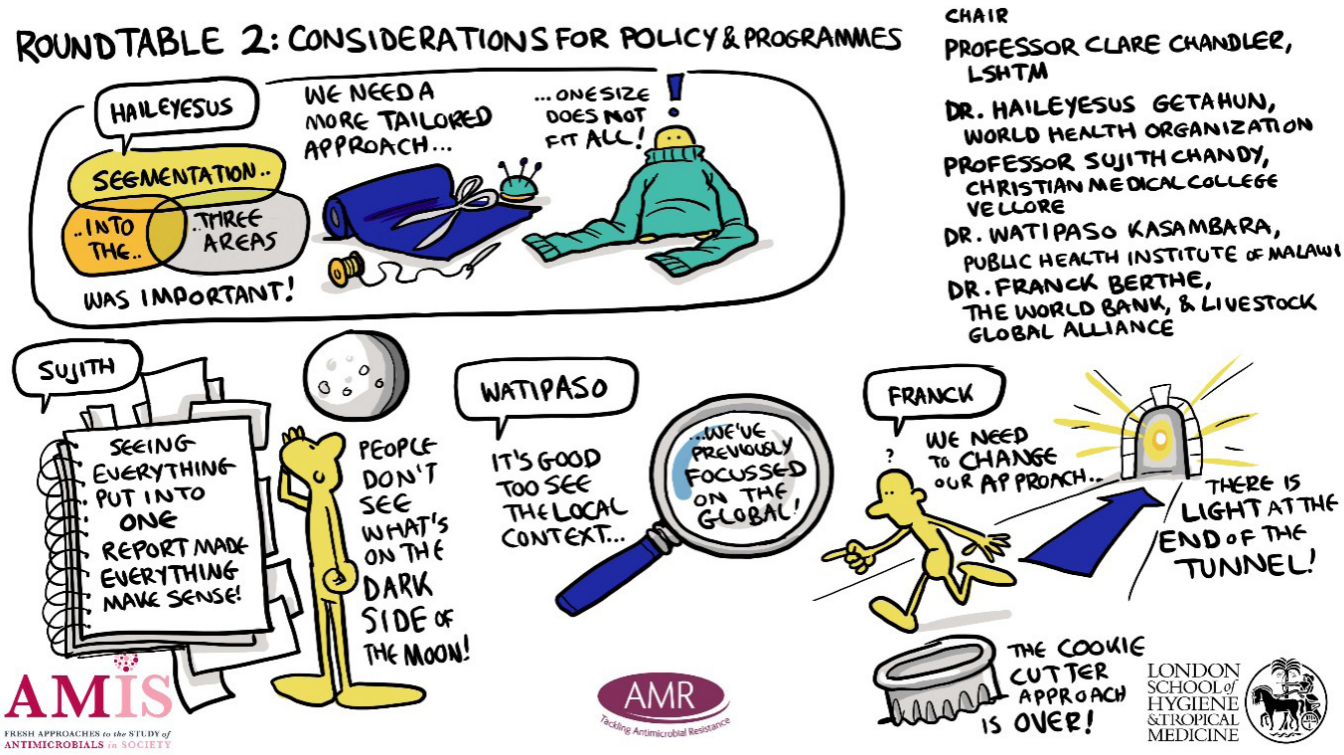
This final session in the Antibiotics in Society panel series looked at antibiotics in terms of science, technology and infrastructures. Professor Nik Brown, Dr Catherine Will, Professor Komatra Chuengsatiansup and Dr Charlotte Brives presented research concerned with a diverse array of environments, ranging from hospital architectures to Thai citrus orchards, and actors including Mycoplasma genitalium and phages.

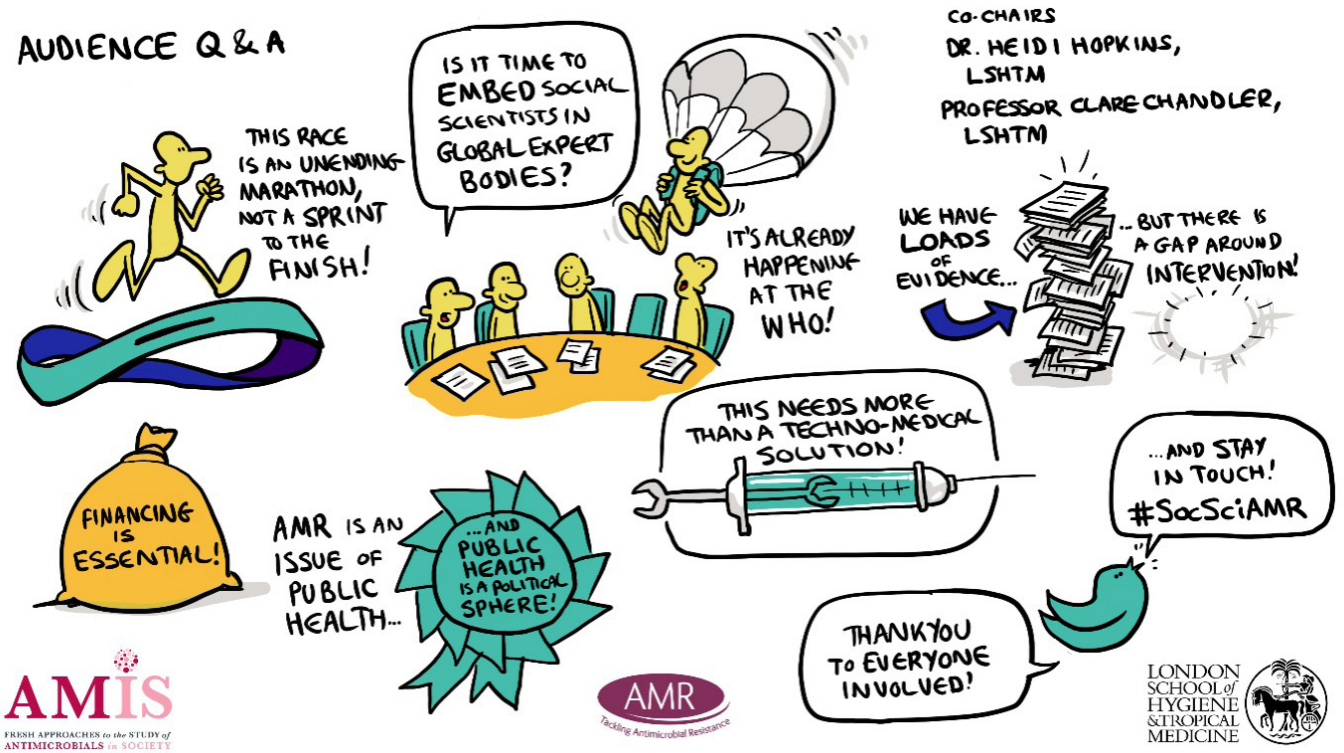
Addressing Antibiotic Use Report and Launch event, 2021

In February 2021, over 140 delegates from around the world joined online for the launch of our collaborative report, "Addressing Antibiotic Use: Insights from Social Science Around the World". The report was introduced, including a framework of practices, structures and networks that capture the range of social research recommendations to address antibiotic use. The report recommended that we need to revisit the focus, scale and timeframes of our responses, with efforts integrated into broader health and development initiatives. Two roundtables were held to discuss the report, where we welcomed a group of panellists with expertise in research, policy and programmes across a range of global One Health settings. We commissioned an artist to capture the event, as shown in the images below. A commentary summarising the discussions in the roundtables was also shared on the AMIS website together with a recording of the event.






ROUNDTABLE 2: CONSIDERATIONS FOR POLICY & PROGRAMMES
CHAIR
PROFESSOR CLARE CHANDLER, LSHTM
DR. HAILEYESUS GETAHUN, WORLD HEALTH ORGANIZATION
PROFESSOR SUJITH CHANDY, CHRISTIAN MEDICAL COLLEGE VELLORE
DR. WATIPASO KASAMBARA, PUBLIC HEALTH INSTITUTE OF MALAWI
DR. FRANCK BERTHE, THE WORLD BANK, & LIVESTOCK GLOBAL ALLIANCE
HAILEYESUS
SEGMENTATION..
..INTO THE..
..THREE AREAS
WAS IMPORTANT!
WE NEED A MORE TAILORED APPROACH...
...ONESIZE DOES NOT FIT ALL!
SUJITH
SEEING EVERYTHING PUT INTO ONE REPORT MADE EVERYTHING MAKE SENSE!
PEOPLE DON'T SEE WHAT'S ON THE DARK SIDE OF THE MOON!
WATIPASO
IT'S GOOD TOO SEE THE LOCAL CONTEXT...
...WE'VE PREVIOUSLY FOCUSSED ON THE GLOBAL!
FRANCK
WE NEED TO CHANGE OUR APPROACH...
THERE IS LIGHT AT THE END OF THE TUNNEL!
THE COOKIE CUTTER APPROACH IS OVER!
AMIS
FRESH APPROACHES to the STUDY of ANTIMICROBIALS in SOCIETY
AMR
Tackling Antimicrobial Resistance
LONDON SCHOOL of HYGIENE &TROPICAL MEDICINE


AUDIENCE Q&A
Co-CHAIRS
DR. HEIDI HOPKINS, LSHTM
PROFESSOR CLARE CHANDLER, LSHTM
THIS RACE IS AN UNENDING MARATHON, NOT A SPRINT TO THE FINISH!
IS IT TIME TO EMBED SOCIAL SCIENTISTS IN GLOBAL EXPERT BODIES?
IT'S ALREADY HAPPENING AT THE WHO!
WE HAVE LOADS OF EVIDENCE...
...BUT THERE IS A GAP AROUND INTERVENTION!
FINANCING IS ESSENTIAL!
AMR IS AN ISSUE OF PUBLIC HEALTH...
...AND PUBLIC HEALTH IS A POLITICAL SPHERE!
THIS NEEDS MORE THAN A TECHNO-MEDICAL SOLUTION!
...AND STAY IN TOUCH! #SocSciAMR
THANK YOU TO EVERYONE INVOLVED!
AMIS
FRESH APPROACHES to the STUDY of ANTIMICROBIALS in SOCIETY
AMR
Tackling Antimicrobial Resistance
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AMIS Capacity Strengthening

The AMIS study also aimed to strengthen the academic capacity of researchers involved in the programme. The capacity building strand of the programme included PhD student projects, additional training for researchers and support from senior academics in writing and developing the independent research skills of the team.

IDRC, Uganda:

The IDRC team have actively strengthened the capacity of their researchers through additional training and studies conducted within the AMIS research agenda. Susan and Christine attended the Medical anthropology module taught at LSHTM in February 2019, to increase their knowledge of anthropological theory and to work with other students and researchers at the school. The team attended the regular Anthropology of AMR group meetings throughout the four years of the project, supporting them to become familiar with anthropological literature, sharing findings with others working in AMR and enhance skills in writing.

Miriam Kayendeke completed her Masters in Public Health while Christine Nabirye completed her Masters of Arts in Sociology. Both Miriam and Christine had their masters' research embedded in the AMIS Uganda project. As such, the project covered the costs for their research in Uganda. Additionally, they have received ongoing mentorship throughout their Master's programme from Prof. Clare Chandler, Prof. Sarah Staedke and Dr. Laurie Denyer Willis.

Susan Nayiga submits her PhD in the faculty of Public Health and Policy at LSHTM in 2021. Her PhD research is embedded in the AMIS Uganda Project and research costs covered by the grant. In addition, she is supervised by co investigators on the AMIS Uganda project: Prof. Clare Chandler, Prof. Sarah Staedke and Dr. Laurie Denyer Willis.

Mahidol University, Thailand:

The Mahidol team conducted monthly journal clubs to increase understanding of ATB & AMR, as well as theoretical issues in anthropology of infectious disease.

The Mahidol team engaged students and staff from the Faculty of Pharmacy, Chiang Mai University through sharing the AMIS projects concepts and methodologies in the Graduate Research Conference in Social and Administrative Pharmacy. This workshop helped to familiarise the pharmacy students with medical anthropology and exchange of ideas across disciplines in their fields of study.

The Mahidol team also engaged a group of students from the Faculty of Pharmacy, Slipakorn University to participate in the household's drugs survey. This work allowed the pharmacy students to become more familiar with medical anthropology as a discipline and some of the approaches to data collection used.

The researchers in the Mahidol team also participated in training workshops on Anthropology and AMR and in further training on pharmacy and AMR. The team also attended trainings on methodologies used in anthropology and hosted a number of events to increase awareness of the AMIS study across the university.

The AMIS programme supported Phaka Whanpuch in conducting her fieldwork for her master's fieldwork at the Faculty of Social Science & Humanities, Mahidol University. Two PhD students in the faculty involved in the AMIS study and have since gone on to complete their PhD dissertations in anthropology of AMR and infectious disease in Bangladesh.

The Mahidol team produced a documentary summarizing the key findings and methodology, called Antimicrobials Resistance, Urban Life and Anthropological Research. It will serve as dissemination and teaching material for anthropology humanities, and health science students.

Ministry of Public Health, Thailand

The MoPH team participated and presented nine times over the course AMIS project at the ministries Friday public seminars. In these seminars, the team presented their fieldwork findings and paper concepts, as well as attending the seminars of others to help build their own understanding of how the different teams within the ministry approach AMR.

The team were also very active in engaging students and other researchers through hosting events to present the ideas and approaches of the AMIS project. In March 2019, the team organized a talk where Dr Clare Chandler presented on Anthropology and public health at the Medical Social Sciences and Humanities Academic Seminar. This involved a workshop with teams from different disciplines across research and policy in Thailand discussing the role of anthropology in public health.

The team also delivered two public lectures about the AMIS project and its implication for Thailand's anthropology at Thammasat University, Bangkok, in 2020

Dr. Komatra Chuengsatiansup, the co-PI who led the MoPH team gave a lecture on how to write a policy document in May 2020 to the AMIS Anthropology of AMR group. The lecture was entitled "Anthropology in Action: Public Policy, Policy Influencing & Policy Briefs".

In 2021, the team has also produced a documentary that introduce their 'following method', which they employed as part of their fieldwork. The discusses it in relation to their different field sites and will serve as a teaching material for Thai students interested in anthropology and AMR.

Abstracts

Peer reviewed articles

Tuberculosis in the borderlands: migrants, microbes and more-than-human borders

Views: 2,936
Altmetric: 5

Journal: Palgrave Communications
Author: Komatra Chuengsatiansup & Wirun Limsawart
Date: March 2019

Abstract: Multidrug-resistant tuberculosis (MDR-TB) has been a widely recognized threat since the TB epidemic was declared a global emergency in the 1990s. The epidemic is particularly critical in the borderlands where humans and microbes move across geographic borders. In this article, we explore the contingency of human-microbe relations in Thailand-Myanmar borderlands. Initially constituted by the colonial encounters, the Siam–Burma border's continuing existence was constantly enacted, negotiated, and co-produced through the entangled interplay of various actors, microbes and pharmaceuticals included. We examine how global forms such as biomedical science, epidemiological practices, and public health interventions were actualized in an attempt to control MDR-TB in this borderland. While disease surveillance and control were seemingly hindered by the permeability of the border and geographic mobility of migrants, the potency of Mycobacterium tuberculosis to lie dormant in human bodies for long periods of time without symptoms posed an additional challenge to epidemiological attempts to segregate the healthy from the contaminated. Combining ethnographic materials from Umphang District, Tak Province at the western border of Thailand with national policy analysis, natural history, and microbiological insights, we reveal how the indeterminacy of borders and complex microbe-human entanglements necessitate changes in the prevailing biocontainment model of infectious disease control. We propose that disease surveillance and response need to transcend the rigid geographic notion of space and include a more flexible topological conception of spatiality that embraces the fluidity of pharmaceuticals, microbes, and human relations. This reinvention of the spatial approach

Current accounts of antimicrobial resistance: stabilisation, individualisation and antibiotics as infrastructure

Journal: Palgrave Communications
Author: Clare I R Chandler
Date: May 2019

Abstract: Antimicrobial resistance (AMR) is one of the latest issues to galvanise political and financial investment as an emerging global health threat. This paper explores the construction of AMR as a problem, following three lines of analysis. First, an examination of some of the ways in which AMR has become an object for action—through defining, counting and projecting it. Following Lakoff's work on emerging infectious diseases, the paper illustrates that while an 'actuarial' approach to AMR may be challenging to stabilise due to definitional and logistical issues, it has been successfully stabilised through a 'sentinel' approach that emphasises the threat of AMR. Second, the paper draws out a contrast between the way AMR is formulated in terms of a problem of connectedness—a 'One Health' issue—and the frequent solutions to AMR being focused on individual behaviour. The paper suggests that AMR presents an opportunity to take seriously connections, scale and systems but that this effort is undermined by the prevailing tendency to reduce health issues to matters for individual responsibility. Third, the paper takes AMR as a moment of infrastructural inversion (Bowker and Star) when antimicrobials and the work they do are rendered more visible. This leads to the proposal of antibiotics as infrastructure—part of the woodwork that we take for granted, and entangled with our ways of doing life, in particular modern life. These explorations render visible the ways social, economic and political frames continue to define AMR and how it may be acted upon, which opens up possibilities for reconfiguring AMR research and action.

The 'Drug Bag' method: lessons from anthropological studies of antibiotic use in Africa and South-East Asia

Journal: Global Health Action
Author: Justin Dixon,Eleanor MacPherson, Salome Manyau, Susan Nayiga (et al)
Date: June 2019

Abstract: Understanding the prevalence and types of antibiotics used in a given human and/or animal population is important for informing stewardship strategies. Methods used to capture such data often rely on verbal elicitation of reported use that tend to assume shared medical terminology. Studies have shown the category 'antibiotic' does not translate well linguistically or conceptually, which limits the accuracy of these reports. This article presents a 'Drug Bag' method to study antibiotic use (ABU) in households and on farms, which involves using physical samples of all the antibiotics available within a given study site. We present the conceptual underpinnings of the method, and our experiences of using this method to produce data about antibiotic recognition, use and accessibility in the context of anthropological research in Africa and South-East Asia. We illustrate the kinds of qualitative and quantitative data the method can produce, comparing and contrasting our experiences in different settings. The Drug Bag method can produce accurate antibiotic use data as well as provide a talking point for participants to discuss antibiotic experiences. We propose it can help improve our understanding of antibiotic use in peoples' everyday lives across different contexts, and our reflections add to a growing conversation around methods to study ABU beyond prescriber settings, where data gaps are currently substantial.

Quick fix for care, productivity, hygiene and inequality: reframing the entrenched problem of antibiotic overuse

Journal: BMJ Global Health
Author: Laurie Denyer Willis & Clare Chandler
Date: August 2019

Abstract: Antimicrobial resistance (AMR) is a major challenge of our time. A key global objective is to reduce antibiotic use (ABU), in order to reduce resistance caused by antimicrobial pressure. This is often set as a 'behaviour change' issue, locating intervention efforts in the knowledge and attitudes of individual prescribers and users of medicines. Such approaches have had limited impact and fall short of addressing wider drivers of antibiotic use. To address the magnitude of antibiotic overuse requires a wider lens to view our relationships with these medicines. This article draws on ethnographic research from East Africa to answer the question of what roles antibiotics play beyond their immediate curative effects. We carried out interviews, participant observation and documentary analysis over a decade in northeast Tanzania and eastern and central Uganda. Our findings suggest that antibiotics have become a 'quick fix' in our modern societies. They are a quick fix for care in fractured health systems; a quick fix for productivity at local and global scales, for humans, animals and crops; a quick fix for hygiene in settings of minimised resources; and a quick fix for inequality in landscapes scarred by political and economic violence. Conceptualising antibiotic use as a 'quick fix' infrastructure shifts attention to the structural dimensions of AMR and antimicrobial use (AMU) and raises our line of sight into the longer term, generating more systemic solutions that have greater chance of achieving equitable impact.

Setting the standard: multidisciplinary hallmarks for structural, equitable and tracked antibiotic policy

Journal: BMJ Global Health
Author: Claas Kirchhelle, Paul Atkinson, Alex Broom, Komatra Chuengsatiansup, Jorge Pinto Ferreira, Nicolas Fortané, Isabel Frost, Christoph Gradmann, Stephen Hinchliffe, Steven J Hoffman , Javier Lezaun, Susan Nayiga, Kevin Outterson, Scott H Podolsky, Stephanie Raymond, Adam P Roberts ,Andrew C Singer, Anthony D So, Luechai Sringernyuang, Elizabeth Tayler, Susan Rogers Van Katwyk, Clare I R Chandler
Date: June 2020

Abstract: There is increasing concern globally about the enormity of the threats posed by antimicrobial resistance (AMR) to human, animal, plant and environmental health. A proliferation of international, national and institutional reports on the problems posed by AMR and the need for antibiotic stewardship have galvanised attention on the global stage. However, the AMR community increasingly laments a lack of action, often identified as an 'implementation gap'. At a policy level, the design of internationally salient solutions that are able to address AMR's interconnected biological and social (historical, political, economic and cultural) dimensions is not straightforward. This multidisciplinary paper responds by asking two basic questions: (A) Is a universal approach to AMR policy and antibiotic stewardship possible? (B) If yes, what hallmarks characterise 'good' antibiotic policy? Our multistage analysis revealed four central challenges facing current international antibiotic policy: metrics, prioritisation, implementation and inequality. In response to this diagnosis, we propose three hallmarks that can support robust international antibiotic policy. Emerging hallmarks for good antibiotic policies are: Structural, Equitable and Tracked. We describe these hallmarks and propose their consideration should aid the design and evaluation of international antibiotic policies with maximal benefit at both local and international scales.

Anthropology and Microbes

Journal: Thammasat Journal
Author: Sittichoke Chawraingern

Abstract: Microbes have been interested in anthropologists for at least 70 years. It begins with studies of sociocultural factors on emergences and epidemic of infectious diseases caused by pathogenic microbes and on the efficiency of interventions, from 1950 to 1970. The awareness of antimicrobial resistance in the early 21st century, later, shapes anthropologist to explore the ways human activities affect mutations of microbes to survive, especially antibiotic uses and their structural factors. The Human Microbiome Project commenced in 2008 push anthropologists to reconsider and improve concepts employed to study the body, human-environmental relationships and also throw a challenge on the human being. The current pandemic of SARS-CoV-2, which causes COVID-19, bring attention from anthropologists to contribute ideas and observations, among them including human-animal (pet and wild) relationships influencing cross-species epidemic, different effects from interventions among people caused by inequality between poor and rich, racism and xenophobia and global food chains in post-COVID -19. In this article, I argue that microbes and anthropology generate a co-evolution, in which anthropology introduce microbe to social science and humanities while microbes improve medical anthropology and anthropology in general both in term of theory and applications.

Use of antibiotics to treat humans and animals in Uganda: a cross-sectional survey of households and farmers in rural, urban and peri-urban settings

Journal: Journal of Antimicrobial Chemotherapy-Antimicrobial Resistance
Author: Susan Nayiga, Miriam Kayendeke, Christine Nabirye, Laurie Denyer Willis, Clare I. R. Chandler and Sarah G. Staedke
Date: October 2020

Abstract: Background. Use of antibiotics to treat humans and animals is increasing worldwide, but evidence from low- and middle-income countries (LMICs) is limited. We conducted cross-sectional surveys in households and farms in Uganda to assess patterns of antibiotic use among humans and animals. Methods. Between May and December 2018, a convenience sample of 100 households in Nagongera (rural), 174 households in Namuwongo (urban) and 115 poultry and piggery farms in Wakiso (peri-urban) were selected and enrolled. Using the 'drug bag' method, participants identified antibiotics they used frequently and the sources of these medicines. Prevalence outcomes were compared between different sites using prevalence ratios (PRs) and chi-squared tests. Results. Nearly all respondents in Nagongera and Namuwongo reported using antibiotics to treat household members, most within the past month (74.7% Nagongera versus 68.8% Namuwongo, P = 0.33). Use of metronidazole was significantly more common in Namuwongo than in Nagongera (73.6% versus 40.0%, PR 0.54, 95% CI: 0.42–0.70, P < 0.001), while the opposite was true for amoxicillin (33.3% versus 58.0%, PR 1.74, 95% CI: 1.33–2.28, P < 0.001). Veterinary use of antibiotics within the past month was much higher in Wakiso than in Nagongera (71.3% versus 15.0%, P < 0.001). At both sites, oxytetracycline hydrochloride was the most frequently used veterinary antibiotic, but it was used more commonly in Wakiso than in Nagongera (76.5% versus 31.0%, PR 0.41, 95% CI: 0.30–0.55, P < 0.001). Conclusions. Antibiotics are used differently across Uganda. Further research is needed to understand why antibiotics are relied upon in different ways in different contexts. Efforts to optimize antibiotic use should be tailored to specific settings.

Peer reviewed Book

Anti-Microbial Resistance: Anthropology of Antimicrobial Medicines

Publisher: Princess Maha Chakri Sirindhorn Anthropology Centre
Author: Komatra Chuengsatainsup and Luechai Sringernyuang (eds) with Clare Chandler, Coll de Lima Hutchison, Sittichoke Chawraingern, Thitima Urapeepathanapong, Chutchon Ajanakitti, Panoopat Poompruek & Phakha Whanpuch
Language of publication: Thai
Date: 2021

Chapter Abstracts:

Chapter 1. Introduction
Komatra Chuengsatainsup, Luechai Sringernyuang, Clare Chandler, Coll de Lima Hutchison

This chapter provides the framing of the research project by situating it within current situation of AMR and the possible contribution of anthropological understanding to shed new light on the problem. It begins with an overview of AMR situation and the global and national attempts to tackle the problem. Anthropological understanding and current developments, both theoretical and methodological, are reviewed. This chapter gives a strong justification of why this project is worth undertaking.

Chapter 2. Social Theory and AMR
Translated and edited by Sittichoke Chawraingern, Thitima Urapeepathanapong and Chutchon Ajanakitti

From: Chandler, C.I.R., Hutchinson, E., & Hutchison, C. (2016) Addressing Antimicrobial Resistance Through Social Theory: An Anthropologically Oriented Report. London School of Hygiene & Tropical Medicine.

Chapter 3. Falling Leaves behind the Building Cracks: Life and Health of the marginalized in a peri-urban area and antimicrobial resistance
Phakha Whanpuch, Luechai Sringernyuang and Panoopat Poompruek

Bedridden patients are vulnerable to various health complications like bedsores, circulation and respiratory problems, depression and contractures, due to lack of activity for long periods as well as complications from the illness and health deterioration. The problems can be more serious among the patients who are aged and from underserved families. Infection is very likely among those who are on medical equipment. Admission and readmission to the hospital due to health deterioration makes these patients vulnerable to hospital-acquired infections (HAI) and antimicrobial resistance (AMR).
This ethnographic work followed 16 bedridden patients in Klai Jai, a peri-urban area near Bangkok, Thailand over 21-month-period (May 2018 - January 2020). This paper, relying on 4 case examples, sheds light on how the bedridden people struggle to live their lives, journeying through deteriorating health, alternating days between home and the hospital ward, and fighting for life from sepsis often complicated by AMR. The way these patients destined to the last day of life was analogous to leaves fallen off the trees in the leftover peri urban space. These patients lived alone or with an aging spouse, often in cheap rental rooms that were impossible to keep them hygienic. Families lived far away or had already died. Most of them lived with only sparing incomes from monthly stipends for the elderly or the disabled provided by the government. Their health problems usually began with chronic ailments like diabetes and hypertension and later developed to stroke or paralysis that led them finally confined on the bed or at home. Some were lucky to have nephew or sisters to care, feed, drive or accompany to the hospital when appointed or in case of emergency.

In this complex peri-urban context, the primary care service functions poorly and is difficult to reach. Basic medical services at home like the change of Foley catheter and nasogastric tube, as well as the care for infected bedsores, were unattainable. By the end of our fieldwork only eleven of the patients remained struggling for life, the lives of the others having ended with drug resistant sepsis. This chapter highlights that infection of AMR among bedridden patients is an important but hidden and under-investigated issue, particularly in the peri urban setting. AMR in bedridden patients is deeply embedded in the lives of the underserved which is fueled by the complex interplay of multi-level socio-economic forces in the peri-urban context. A context-specific well developed primary care system which includes home visit, homeward and effective referral system to a higher-level service is crucially needed.

Chapter 4. Ignorant and Unaware?: Decoding through an anthropological lens
Phakha Whanpuch, Luechai Sringernyuang and Panoopat Poompruek

Like other countries cast as 'developing', along with the expansion of modern health service systems, pharmaceuticals – the most concrete technological fix – have reached all frontiers of Thai society since. Previous studies have consistently reported the abundance of a wide range of modern medicines, including antibiotics, available through both formal and informal sources. Cultural reinterpretation of modern medicines has produced new medical and social realities, including antibiotics as Ya Kae Àk-sàyp ,- which literally means medicine to cure inflammation, viewed as a major obstacle for promoting AMR awareness.

This chapter relies on qualitative data, in-depth interviews and three sessions of focus group discussion among adult villagers in a peri-urban area close to Bangkok during Feb -May 2019. It aimed to explore how infection, antibiotics, AMR, and their relationships were perceived and responded. Data reveal that antibiotics are commonly referred to under the names of Ya Kae Àk-sàyp , which means medicines to treat "Àk-sàyp " – a Thai Traditional medical concept which includes painful, reddish, swollen, and may be hot symptoms, but, with nothing to do with infection in the biomedical sense. Antibiotics are also called in another name-Ya Ka Chue, meaning medicine that kills "chue". "Chue" in Thai although refers to something that causes an illness, yet, has nothing closed to germs. With these regards, antibiotics, the western bio-medical fix has become a new construct in the local Thai medical concept which does not map on well to biomedical categorisations that organise diseases – and medicines – around microbial and biochemical processes. Nonetheless, a wide range of Ya Kae Àk-sàyp are plentiful and easily accessible. When communication messages to raise awareness of AMR characterise microbes as scary enemies of humans, this brings to the fore a microbiological world that has previously been mystified in the Thai public world, where so-called 'drug use irrationality' prevails.

This paper concludes that the awareness of the public on AMR is just like the tip of the iceberg which structural forces underlying does not include only socio-cultural but the problems in science popularization ones. The promotion of AMR awareness, thus, needs to go beyond the "empty vessel" mindset, to consider the complexity of how the realities of antibiotics, infection, and AMR are socially co-constructed together with existing understandings and experiences of ill-health and medicine use. The interplay of various conditions- demand on drugs, marketing strategies, professional discourses and local medical theory is influential and dynamic. Campaigns on ATB awareness, thus, if to be successful, cannot be just through the adding of scientific and rational knowledge but has to be designed to take into account all of these.

Chapter 5. Following Method: The Moving and Following Research Methodology
Chutchon Ajanakitti

AMR should not be viewed exclusively as a medical issue. Neither does its diverse causes and consequences misled us to focus on individual behaviors. To broaden our perspectives amid the forces of globalization, which drive people, capitals, information, and technologies to cross borders restlessly and rapidly, the social and cultural dimensions must be taken into consideration. In Thailand, the studies of immigrant labor, antibiotics, and tuberculosis across the Thai-Myanmar border, the antibiotic use in citrus orchards in the central and northern parts of the country, and the metric and surveillance framework adopted from the international health organization to reduce antibiotic dispensing at health centers in rural areas reveal how local phenomena are inseparable and always connected to broader flows of events. All these fascinating works are part of the Anti-Microbial in Society (AMIS) project, which proposes a new research approach called Following Method (FM).

The aim of this chapter is to describe the distinctive characteristics of this methodology, which is influenced by the ontological turn in anthropology. This chapter explains Following Method by answering two essential and fundamental questions: What is Following Method? And how can it be applied ethnographically? In response to the first question, I clarify that FM is focused on attempts to dissolve dichotomies and transcend boundaries of space (global vs. local), of species (human vs. nonhuman), and of disciplines (natural science vs. social science). Later, I respond to the second question by demonstrating that FM focuses on following and tracing a network of practices entangled by human and nonhuman actors, without predetermined or fixed means, to understand fluidity, continuous variation, and unpredictable consequences. In addition, I compare how FM extends Malinowski's traditional fieldwork style as well as multi-sited ethnography.

Chapter 6. Antibiotic uses in mandarin orchard: Citrus greening disease and a more-than-human anthropology
Thitima Urapeepathanapong, Komatra Chuengsatiansup and Coll de Lima Hutchison

AMR should not be viewed exclusively as a medical issue. Neither does its diverse causes and conIn recent years, concerns that overuse of antibiotics in agriculture may contribute to the anti-microbial resistance has been on the rise. This chapter aims to gain a better understanding of antibiotic injection in mandarin orchards as a treatment for citrus greening disease in Thailand. By examining plants, pathogens, pests, pharmaceutical and people to reveal how biological evolution, social coordination of labors, and technological changes combine to create a bio-sociotechnical assemblage of antibiotic uses in mandarin orchard. Anthropological studies of pharmaceuticals have been mostly anthropocentric. This chapter is our attempt to demonstrate the inseparability of a pharmaceutical anthropology of the human and the more-than-human worlds. We followed mandarin orchard in Chiang Mai, Phrae, Pathumthani, and Sukhothai provinces to understand how materiality and sociotechnical tinkering played important roles in antibiotics use in citrus industry. This paper is divided into five parts. In the first part, we elucidate the situation on citrus greening disease and its impact on growers and global citrus industry. The second part examines historical, biological, and botanical side of citrus, including its evolutionary biology and ecologies in different climates. The third part explores in detail the use of antibiotics in citrus orchards and describes the development of antibiotics use in plants. The fourth part, we illustrate how mandarin growers have been struggling and tinkering for their survival. The final part discusses on a more-than-human anthropology that goes beyond anthropocentrism.

Chapter 7. Metrics, AMR and Cultural Practices of Health Workers

Sittichoke Chawraingern and Coll de Lima Hutchison

Antimicrobial resistance (AMR) has been considered by the WHO a global public health challenge. Optimizing the use of antimicrobial agents has become a strategic intervention among others promoted by the entity for eradicating impacts on the health and economy of each country. Thailand's Ministry of Public Health (MoPH) actively adheres to the global health body's direction and incorporates the idea and intervention into its bureaucratic system. This chapter proposes that "metrics" have taken a vital role in this global-national transfiguration and have influenced local practices of health workers. The findings from a one-year ethnographic study at a health centre in a sub-urban province in Central Thailand expose that, rather than AMR by itself, metric surveillance system, intensely relying on digital data, imposes challenges on frontline health workers.

The chapter begins by tracing the concept of global health that emerged since the International Sanitary Conferences in the 19th century to the Health Section of the League of Nations in the early 20th to the UN and the WHO after World War II. Then, it examines how "Metrics", a conceptual tool used for evaluating impacts caused by public health concerns and interventions expected to control diseases, are applied by international organizations to serve the concept of global health. Later, the chapter explores how metrics and the concept of global health were adopted by the MoPH and transfigured to the scheme called "RDU KPI" (Rational Drug Use Key Performance Indicators) which compulsorily requires health centres to restrict antimicrobial prescriptions to reach its targets and demands them to report prescriptions' data. Case study at Vieng Pet health centre is used to explore how RDU KPI metric affected practices of health workers, including redressing data to reach the target, devaluating "care" to "performance", causing unnecessary adversaries and competitions among staffs, and interrupting staff-patient relationships. The concept of "Data performativity" was employed to illuminate how metrics shaped health staffs' experiences in this section. We also examine the ways that nurses and public health workers worked around the burden created by metrics and were able to reach to RDU KPI target at the same time. They convinced patients to replace antimicrobials with herbal medicine substitutes by pointing that a "capsule form" (a symbol of modern drug) of herbs implies that its efficiency is equal to antimicrobials. The staffs keep and prescribe antimicrobials to poor patients who are at risk to be infected from their lack of access to hospital and their contaminated work environment. An illegal migrant worker residing in a pig farm, for instance, was treated with antibiotics while asking well-to-do patients to purchase antimicrobials at the private clinic instead of getting for free at the health centre. Finally, the staffs redress data by shifting diagnosis and prescription to diseases that are not restricted by RDU KPI.

The chapter concludes that employing global-national metrics to decrease antimicrobial consumptions place challenges to health centre's workers. Local health workers actively forging their "cultural responses" to work around inconveniences caused by this policy instrument and deliberately design how to care for people within their context. It is a balance between performing care required by their status as caregivers and providing performance indicators required by the ministry.

Chapter 8. Herbal drug, Disease-resistant pig, and Organic orange: Rethinking Counterfactuals of Antibiotic Use in Human, Animal, and Plant
Chutchon Ajanakitti

This chapter begins by examining global AMR policy, including WHO, FAO, and OIE guidelines, as well as Thailand's adopted framework. I argue that efforts to develop counterfactuals or alternatives to antibiotic use are limited, and that AMR public policies still prioritize behavioral changes, such as raising awareness and restricting antibiotic use in the health and agrobusiness sectors. As such, structural and systematic reconfigurations are rarely addressed when considering policies on counterfactuals. However, there are three interesting attempts in Thailand to find antibiotic alternatives: the first is the use of herbal drugs in state hospitals, the second is the application of breeding practices to create better disease resistant pig, and the third is organic orange farming; all these cases may be a good place to start thinking about this problem more seriously.

This article proposes that there are two distinct logics behind these alternatives, based on data gathered from AMIS researchers in three different locations. First, the logic of replacement, as seen in the use of traditional Thai herbal drugs that are gradually replacing antibiotic prescriptions in specific diseases, has been struggling with the incommensurability of knowledge and practices between biomedicine and traditional medicine. Second, the logic of rejection, as shown in efforts to fully eliminate antibiotics from their environments by breeding disease-resistant pigs and using non-chemical fertilizers and pesticides in orange farms, both of which have been encountering standardization and scalability issues.

Furthermore, I contend that these alternatives collectively demonstrate that we often ignore the critical systemic obstacles of modern ontology and capitalism, which reinforce the human-centric mode of production. As a result, medicinal plants, pigs, and citrus are all treated as resources to be exploited. However, they also show that alternative sciences or science-based alternatives to dealing with AMR are possible, but more-than-human ontology and infrastructure understanding of antibiotics are needed - to help us get out of this difficult situation.

Reports and Commentaries

Anthropology's contribution to AMR control

Journal: AMR Control
Author: Laurie Denyer Willis & Clare IR Chandler
Date: 2018

Abstract: Anthropological study can provide important insights for addressing AMR. This paper describes anthropological approaches for understanding the context of increasing antimicrobial use around the globe as well as how important anthropological contributions to the study of infectious diseases can inform studies of AMR emergence and transmission. Four themes are followed to illustrate this: care; pharmaceuticals and markets; knowledge; and ecologies. Together, these accounts illustrate the complex stories behind our relations with microbes and antimicrobial medicines across the world today, and help us to study and anticipate consequences – intended or not – of both AMR and AMR control strategies globally.

The modern era must end: antibiotic resistance helps us rethink medicine and farming

Journal: BMJ Opinion
Author: Coll de Lima Hutchison, Gwen Knight, Richard Stabler & Clare IR Chandler
Date: July 2018

Abstract: In this piece the authors describe the important role antibiotics have played in modern life, including in medicine and farming. As a result, warnings about increasing antibiotic resistance aren't just a threat to our ability to successfully fight off infections, but by extension, they are also a threat to modern life as many of us have come to know it. The opinion piece proposes that in order to reduce the use of antibiotics, we need to go beyond targeting individual behaviour, and must engage with new approaches to understanding and addressing the connections between humans, animals (including microbes) and environmental health, which is a thematic focus of the AMIS Hub. The notion is that if we can better appreciate and acknowledge the current state of antibiotic resistance as also being a consequence of modern livestock-production, consumption, and economic profit-distribution, then we can be better prepared to address changes to delay increasing antibiotic resistance beyond individual behaviour, thus providing an opportunity to rethink, and maybe even improve, modern farming and medical practices as we know them today.

Hunger will kill us before the coronavirus does!

Journal: Social Science in Humanitarian Action Platform
Author: Susan Nayiga, Christine Nabirye, Miriam Kayendeke, Sarah G Staedke
Date: July 2020

Abstract: Africa is particularly vulnerable to the coronavirus and the effects of these restrictions given the weak healthcare infrastructure, the huge burden of diseases especially malaria, HIV and tuberculosis, high levels of malnutrition and food scarcity, high percentage of the urban population in informal settlements, high levels of poverty and unemployment with many living hand to mouth and a lack of facilities like running water for sanitation and good hygiene.
Through ongoing ethnographic fieldwork in the Antimicrobials in Society (AMIS) Project, the authors of these notes have come to learn about the everyday realities of the people engaged with as characterized by precarious employment, uncertain economic opportunities, a lack of safety nets, scarcity of quality healthcare, climate instability and being unable to afford the basic needs of life, let alone a full course of antibiotics. The AMIS project is a social science research project aimed at understanding the roles of antimicrobials in society and everyday life.

Social, cultural and economic aspects of antimicrobial resistance

Journal: Bulletin of the World Health Organisation
Author: Timo Minssen, Kevin Outterson, Susan Rogers Van Katwyk, Pedro Henrique D Batista, Clare I R Chandler, Francesco Ciabuschi, Stephan Harbarth, Aaron S Kesselheim, Ramanan Laxminarayan, Kathleen Liddell, Michael T Osterholm, Lance Price, and Steven J Hoffman
Date: December 2020

Abstract: Although often considered only a medical problem, antimicrobial resistance is an evolutionary challenge accelerated by social, cultural and economic factors that lead to the misuse, overuse and abuse of life-saving antimicrobial medicines. The antimicrobial resistance challenge is compounded by inadequate attention to disease prevention and response, global circulation of people and products, differences in industry and market regulations across countries, and a fragile pipeline of new antibiotics and their alternatives.

While the discovery of new antimicrobials will provide temporary solutions, sustainable success requires rigorous social science research that explores the drivers of antimicrobial resistance. These solutions should promote balance between equitable access to, conservation of, and innovation for antimicrobials, adapted to local conditions across the globe. Effective actions against antimicrobial resistance will need to be informed by insights and evidence from the social sciences, encompassing a broad variety of disciplines. From our perspective, current engagement with the full range of social sciences is inadequate; greater collaboration within and between social science disciplines must be prioritized. Only then can we generate sufficient cross-sectional knowledge to overcome obstacles to addressing antimicrobial resistance, including inequitable access to effective antimicrobials, inadequate sanitation and hygiene infrastructure, disincentives for appropriate use of existing antimicrobials, and insufficient incentive for innovation in developing new antimicrobials. Collaboration among social scientists from various disciplines is also needed to help anticipate unintended consequences of action, such as inadvertently driving the use of suboptimal antibiotics by raising concerns about resistance.

Addressing antibiotic use: insights from social science around the world

Journal: LSHTM Research Online
Author: Alice C Tompson & Clare IR Chandler
Date: February 2021

Abstract: Antimicrobial resistance (AMR) is a major threat to global health and economies, the harmful effects of which are disproportionately experienced by those living in Low- and Middle-Income Countries (LMICs). Tackling this complex problem requires multidisciplinary and multisectoral responses. In the last few years, there has been a growing acknowledgement of the vital role of social science in understanding and intervening on antibiotic use, a key driver of AMR. Existing reviews summarise evidence of specific aspects of antibiotic use and specific intervention types. The growing concern that our off-the-shelf toolkit for addressing antibiotic use is insufficient in the face of rising use across humans, animals and plants, requires that we take a fresh look at the ways we are understanding this problem and possibilities for solutions. The ambition of this report is to provide a timely intervention into this global debate, by formulating a conceptual map of the insights from the growing body of social science research on addressing antibiotic use conducted in a diverse range of economic, social, and health system settings around the world.

Submitted Manuscripts

Reconciling imperatives: Clinical guidelines and the enactment of good care in lower-level health facilities in Tororo, Uganda

Journal: Global Public Health
Author: Susan Nayiga, Laurie Denyer Willis, Sarah G Staedke, and Clare IR Chandler
Date: 2018

Abstract: Faced with the threat of antimicrobial resistance, health workers are urged to reduce unnecessary prescription of antimicrobials. Clinical guidelines emerge through evaluations of best practice – bundling clinical, technological and economic dimensions – creating metrics through which to assess practice. On the global health stage, guidelines become a device through which to address complexities of care in multiple settings. Prescribing practice can be benchmarked against the latest clinical guidelines, a key tenet of antimicrobial stewardship programmes.

To understand prescribing and dispensing of antibiotics, ethnographic data was gathered in lower-level health care facilities in rural Eastern Uganda for 10 months between January and October 2020, extending previous work carried out over the past decade. In a context of scarcity where 'care' is characterized by delivery of medicines, and is constituted beyond these algorithmic outputs, we observed that clinical practice in lower-level health facilities in Nagongera, Tororo was shaped by availability of resources, and professional and patient expectations, as much as by the clinical guidelines. For stewardship to care for patients as well as for medicines, a better understanding of clinical practice and expectations of care is required in relation to and beyond the framework of guidelines.

Taking opportunities, Taking medicines: antibiotic use in rural Eastern Uganda

Journal: Medical Anthropology
Author: Susan Nayiga, Laurie Denyer Willis, Sarah G Staedke, and Clare IR Chandler

Abstract: Antimicrobial resistance is a threat to public health worldwide. With rising concerns about the continued increase in antibiotic use in low-and middle-income countries, world health leaders have emphasized the need for context-specific interventions to optimize antibiotic use. Drawing on ethnographic data gathered in Eastern Uganda, we describe how taking antibiotics in rural households relates to social and economic imperatives to 'take opportunities', in a context of every day precarity and discourse of betterment in today's modern Uganda society. Efforts to optimise antibiotic use must be crafted together with an awareness of the political landscape in which these medicines are deployed.

Antibiotic 'Entanglements': Health, labour and everyday life in an urban informal settlement in Kampala, Uganda

Journal: Critical Public Health
Author: Christine Nabirye, Laurie Denyer-Willis, Susan Nayiga, Miriam Kayendeke, Sarah Staedke, & Clare Chandler

Abstract: Antibiotics are a routine part of everyday life in many contexts, contributing to the development of antimicrobial resistance (AMR). Our study explores the use of antibiotics in a large informal settlement in Kampala, Uganda. While 'rational use' antibiotic polices have come to define the majority of interventions and assessments over the past few decades, in this paper we argue for the importance of attending to the structural reasons for antibiotic use in urban informal settings beset by inequality. In other words, how everyday uses of antibiotics are entangled with everyday experiences of precarious labour and environmental contamination and infection. We show how antibiotics have become a key part of everyday life for precariously employed urban day-wage workers living in this informal settlement. We found that for many people, their daily work and ongoing health was entangled with antibiotic use; that is, people showed us how their frequent use of antibiotics cannot be separated from the realities of living in a politically, economically and environmentally degraded 'informal' landscape. Antibiotics, we argue, have become a way to negotiate the inequalities written into the landscape; their use entangled with ongoing relations with labour, environment and bodily suffering. Antibiotic use interventions often depend on theories and models of individual behaviour change, placing responsibility for action at the individual level, with the individual normalised as the constellation of risk variables that requires intervention through behaviour change. We propose that attention must be paid to the structural conditions that make avoiding antibiotic use nearly impossible.

Protein Architectures: Antibiotics and the politics of consumption on suburban farms in Kampala, Uganda

Journal: Medical Anthropology Quarterly
Author: Laurie Denyer Willis, Miriam Kayendeke, and Clare Chandler

Abstract: In this paper, we attend to the logics of consumption as they relate to protein and antimicrobial resistance (AMR). By maintaining an emphasis on how bodies, and what they consume, are imagined and made political through the policing of enmeshed life, we think through the concept of protein architectures in postcolonial settings. We approach bodies, their consumables, and their environments as scaffolded and interstitched through the enduring logics of protein. Here, we connect this to conceptualisations of antibiotic resistance within global health, where the logics of 'protein deficiency' often act as a kind of apolitical node that antibiotic use is parsed through. Based on ethnographic research conducted on chicken and pig farms in Kampala's suburbs, this article considers how protein consumption functions as an organizing device, with implications for global health initiatives regarding antibiotic governance.

The Rise of Quick Farming and Antibiotics as Insurance in peri-urban Uganda

Journal: Globalisation and Health
Author: Miriam Kayendeke, Laurie Denyer-Willis, Susan Nayiga, Christine Nabirye, Nicolas Fortané , Sarah G Staedke & Clare IR Chandler

Abstract: Background. The 'livestock revolution' has seen numbers of pig and poultry farms rise significantly across Africa. Heralded a success on the one hand, with the potential to address poverty and nutritional needs, this shift towards intensification has also sparked concern. In particular, antibiotic use in food animal production is understood to contribute to antibiotic resistance in humans. There is a need to understand the roles of antibiotics in the rapid expansion of small- and medium-scale farms in order to consider alternatives in the realities of lives and livelihoods. Methods: We conducted an in-depth ethnographic study in Wakiso district, Uganda, between May 2018 and March 2021. This included a medicine survey on 115 pig and poultry farms, in-depth participant observations for over 18 weeks at six semi industrialised pig and poultry farms, 29 in-depth interviews with farmers, local animal feed mixers/sellers and key stakeholders in the livestock sector, four focus group discussions with 38 farmers and 7 veterinary officers, and analysis of archival, media and policy documents. Results: Our findings show a widescale adoption of 'quick farming', a phenomenon that sees Ugandans moving into the raising of 'exotic' livestock with imported methods and measures for production. This mode of farming relies heavily on antibiotics, not only for immediate therapy and prevention of infections but also to promote production, profitability and protection of individual financial investments. Conclusion: This research draws attention to the risks and responsibilities individual farmers were expected to take on within a devolved model of development through commercial livestock farming, amidst a fractured health and economic system. To reduce reliance on antibiotics, farmers and their animals must be provided with alternative forms of protection from the risks inherent in this rapidly expanding market.

Antibiotic Oranges: Plants, Pest, Pathogens and a More-than-Human Pharmaceuticalization

Journal: Medical Anthropology Theory
Author: Thitima Urapeepathanapong, Coll de Lima Hutchison and Komatra Chuengsatiansup

Abstract: Medical professionals and policymakers' fearful of antimicrobial resistance have largely directed their attention to antibiotic use in humans and animal agriculture. In Thailand, some concern from policymakers and scientists has pointed to their use in citrus orchards and question its 'appropriateness', calling for reductions, if not complete cessation of their use. We draw on our fieldwork to explore the emergence of antibiotic use for citrus greening disease (CDG) as part of shifting more-than-human assemblages of plants, pests, pathogens, and people, as well as varying climates, technologies and farming practices, all with their own contingent, but increasingly entangled histories. We suggest that pathogenicity of CDG rather than a threat coming from outside mandarin agriculture, is one that repeatedly emerges from within, and in Thailand appears to have increased along with the intensification of farmers' growing practices. We document how, while antibiotics emerged as a solution in the mid-20th century, their 'pharmaceutical efficacy' was never sufficient for their widespread adoption. Rather, the pharmaceuticalisation of citrus orchards in Thailand was and continues to be entangled not only with the expansion and intensification of mandarin agriculture, but also affordability of antibiotics, dissemination of relevant knowledge and equipment for their injection. In closing, we reflect on current proposals to reduce or stop antibiotic use as a kin to attempts to medicalise mandarin orchards, which risk not taking seriously how important antibiotics' role is in sustaining orchard profits and intensive agriculture practices in 'driving' and providing rationalisation for their adoption in the first place.

The political economy of antimicrobial access and distribution in community pharmacies in Thailand: mystifying medicines and maximising profit.

Journal: Global Public Health
Author: Phakha Whanpuch, Anna Perris, Panoopat Poompruek, Clare I.R. Chandler, Luechai Sringernyuang

Abstract: Thailand's antimicrobial stewardship strategy has focussed on promoting 'rational drug use' in the public sector, to reduce the threat of drug resistance and control healthcare expenditure. The strategy's next ambition is to attend to the private sector, where antibiotics are widely available over the counter without prescription. Using ethnographic and survey data, this paper follows antibiotics through community pharmacies, to explore drug distribution and access, and identify potential challenges for antimicrobial stewardship. We extend the analytical frame beyond 'irrational' dispenser-customer transactions, to explore the logics of practice of a multiplicity of actors embedded in a complex 'pharmaceutical nexus' (Petryna et al, 2006). Highlighting the role of the pharmaceutical industry in 'mystifying medicines', we show how diverse antimicrobial products are collapsed into a generalised category of 'strong medicines', effective for curing inflammation. We further examine how Thailand's drug regulation and classificatory systems, historically orientated around access to medicines, continue to enable the proliferation of antibiotics in the context of contemporary efforts to control distribution. Recognising the negotiations involved in dispensing and procuring antibiotics in a pluralistic health system, we attempt to reconfigure allocations of responsibility, advocating for stewardship approaches that take into account local ecologies of care, as well as implications for access, equity, and accountability.

Antibiotic arrivals in Africa: case study of yaws and syphilis in Uganda, Malawi and Zimbabwe

Journal: Medical Anthropology Theory
Author: Paula Palanco Lopez, Salome Manyau, Justin Dixon, Eleanor MacPherson, Susan Nayiga, John Manton, Claas Kirchhelle and Clare Chandler

Abstract: The mass production of antibiotics in the 1940s enabled their travel beyond Europe and the Americas, but to date the significance of the way these medicines co-constituted regimes in colonial times has not been systematically described. This article traces, through a case study of yaws and syphilis, arrivals of antibiotics in three countries of Eastern Africa – Malawi, Zimbabwe and Uganda. We draw attention to the emergent roles of antibiotics at the intersection of colonial governance and humanitarianism in these different settings. Through this analysis of archival and ethnographic materials we explore ways in which antibiotics became 'infrastructural' in material, affective and political ways. Achieving a better understanding of the deep entanglement of antibiotics with human systems and lives is crucial to address the pressing issue of antimicrobial resistance. With this paper we join to the global multidisciplinary efforts to tackle AMR, pointing out the often-overlooked role of colonial history in it. We hope to open a line of research that will provide valuable insights for the development of effective measures to prevent and reduce the spread of antibiotic resistance.

Antibiotic Stories: A Mixed-Methods, Multi-Country Analysis of Household Antibiotic Use in Eastern Africa

Journal: BMJ Global Health
Author: Justin Dixon, Eleanor MacPherson, Esnart Sanudi, Alex Nkoambe, Salome Manyau, Portia Mareke, Kenny Sithole, Susan Nayiga, Miriam Kayendeke, Christine Nabirye, Laurie Denyer Willis, Sham Lal, Chrissy Roberts, Sarah Staedke and Clare I.R. Chandler

Abstract: Background. As concerns about the prevalence of infections that are resistant to available antibiotics increase, attention has turned towards the use of these medicines both within and outside of formal healthcare settings. Research beyond formal healthcare settings has been predominated by social surveys. Few studies to date have used comparative, mixed methods approaches to render visible patterns of use within and between settings as well as wider points of context shaping these patterns.

Design. This article analyses findings from mixed-methods anthropological studies of antibiotic use in rural and urban settings in Zimbabwe, Malawi and Uganda 2018-2020. All used a 'drug bag' method to capture frequency and types of antibiotics used amongst 1,811 households. We then undertook observations and interviews in residential settings, with health providers and key stakeholders to better understand the 'stories' behind the most-used antibiotics.
Results. The most self-reported 'frequently used' antibiotics across settings were the WHO Access-list antibiotics amoxicillin, cotrimoxazole and metronidazole. These three antibiotics had different biographies in different countries, which we explain in terms of differences in the configuration of national and global supply chains and health systems and that are entrusted to deliver medicines and care. Despite these differences, in all settings antibiotics have become integral to household strategies for navigating fragmented healthcare landscapes, systemic inequities and the precarities of modern life.

Conclusions. Our findings challenge the predominant focus of stewardship frameworks on individual knowledge and behaviour. We suggest future interventions could consider systems – rather than individuals – as stewards of antibiotics, reducing the need to rely on these medicines to fix other issues of inequity, productivity and security.

Understanding antibiotic use: practices, structures and networks

Journal: Journal of Antimicrobial Chemotherapy
Author: Tompson A.C.; Manderson L.; Chandler C.I.R.

Abstract: In this article, we consider the problem of how to understand the rising use of antibiotics globally. Drawing on ethnographic approaches as a set of tools, concepts and theories, we explore research that situates antibiotic use in relation to interactions of pathogens, humans, animals and the environment in the context of globalisation, changes in agriculture, and urbanisation. We group this research into three areas: practices, structures and networks. Much of the public health and related social research concerning antimicrobial resistance (AMR) has focused on antibiotic use as a practice, with research characterising how antibiotics are used by patients, farmers, fishermen, drug sellers, clinicians and others. Researchers have also positioned antibiotic use as emergent of political-economic structures, shedding light on how working and living conditions, quality of care, hygiene and sanitation foster reliance on antibiotics. A growing body of research sees antibiotics as embedded in networks that, in addition to social and institutional networks, comprise physical, technical and historical connections such as guidelines, supply chains and reporting systems. Taken together, this research emphasises the multiple ways that antibiotics have become built into daily life. Wider issues, ones that may be invisible without explication through ethnographic approaches, need to be considered when addressing antibiotic use. Adopting the complimentary vantage points of practices, networks and structures can support the diversification of our responses.

* For further updates on the outputs and impacts of the Antimicrobials In Society Programme, please visit the LSHTM homepage: https://www.lshtm.ac.uk/research/centres-projects-groups/amis-hub

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