

HOW POVERTY CONTRIBUTES TO ANTIMICROBIAL RESISTANCE

OVERUSE OF ANTIMICROBIAL DRUGS CREATES DANGEROUS RESISTANT STRAINS OF MICROORGANISMS. YET IN SOME PLACES OF THE WORLD TODAY, IT IS IMPOSSIBLE TO GET BY WITHOUT THEM. MEDICAL ANTHROPOLOGISTS PROFESSOR CLARE CHANDLER AND SUSAN NAYIGA, OF THE LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE IN THE UK, STUDY HOW CONDITIONS IN UGANDA FORCE RESIDENTS TO RELY ON ANTIBIOTICS ON A DAILY BASIS

TALK LIKE A MEDICAL ANTHROPOLOGIST

ANTIMICROBIAL DRUGS – drugs that kill or suppress the growth of bacteria, fungi, viruses and other microorganisms in or on the human body, other animals or plants

ANTIBIOTICS – a type of antimicrobial drug that kills or suppresses the growth of bacteria

ANTIMICROBIAL RESISTANCE (AMR) – the ability of microorganisms to survive antimicrobial drugs due to evolutionary adaptations gained through repeated exposure to these drugs

MULTIMORBIDITY – multiple conditions that combine to create ill-health

PARTICIPANT OBSERVATION – an anthropological data collection method in which researchers join in with the activities of the people they are studying in order to observe through experience

‘ONE HEALTH’ APPROACH – an approach to health that combines diverse academic disciplines and considers animals, plants and the environment as well as humans

Antibiotics have transformed human life. Infections that once killed millions can now be cured by taking a few tablets. Yet this miraculous technology contains the seeds of its own destruction – the more we use antimicrobial drugs, the more microorganisms evolve, adapt and become resistant to them. Overuse of antimicrobials can breed dangerous ‘superbugs’ immune to any treatment. As a result, the United Nations considers antimicrobial resistance (AMR) to be a global high priority health issue and recommends reducing antimicrobial drug use.

But why do we overuse antibiotics, and why is it difficult to stop overusing them? With the Antimicrobials in Society (AMIS) project, Professor Clare Chandler and PhD researcher Susan Nayiga of the London School of Hygiene and Tropical Medicine are studying antibiotic use in rural and urban Uganda, highlighting the

difficult choices local people face when it comes to health and work.

THE PROBLEM OF ANTIMICROBIAL OVERUSE

Antimicrobial drugs have many important uses. They cure and prevent infections in humans, animals and even crops. However, they have come to be used in cases beyond the strictly medically necessary. For example, people might use them to increase livestock productivity and as a quick fix to stop infections, rather than avoiding infections in the first place through better hygiene and sanitation infrastructure.

As human use of antimicrobials has increased, microorganisms have adapted and evolved to become resistant to these drugs. “It has been estimated that by 2050, 10 million lives a year could be lost due to drug-resistant infections,”

says Clare. The problem is a global one, as resistant strains bred in one small region can quickly travel around the world thanks to the interconnectedness of modern life and the world economy.

But reducing antimicrobial use is easier said than done. Many people have good reasons to rely on antibiotics in the short term, even if doing so increases the risk of superbugs in the long term. Medical anthropologists like Clare and Susan study how people interact with medicines. They use their research findings to help policy-makers develop policies that allow people to live with less reliance on antimicrobial drugs.

ANTHROPOLOGICAL METHODS

To study antibiotic use in rural and urban Uganda, Clare, Susan and the AMIS team used a method called ‘participant observation’. They spent extended periods of time living with the communities they were studying, getting to know how things are done and what day-to-day life is like, immersing themselves in the local culture to understand the rules, the local community’s idea of common sense, and how people respond to challenges within their cultural context.

They also used surveys and ‘medicine bags’ to discover how people interact with antibiotics. “Rather than asking ‘do you use antibiotics?’ which might be interpreted differently by different people, we showed people packets of locally available antibiotics,” explains Susan. “We asked them to sort them into piles of medicines they recognised, medicines they used frequently and medicines they don’t know. This helped us to understand the significance of medicines in people’s lives.”

In addition to gathering data from communities, Susan and Clare put what they learnt into historical and political context. By examining past policy documents and evaluation reports, they were able to trace the influence of different local, national and international programmes and policies that had attempted to improve the health of particular populations. "Our analysis pulled together different threads of research, weaving together narratives that could describe and explain what we were seeing about antibiotic use in everyday lives," says Susan. This approach helped them understand why people use certain medicines and why they must rely on antibiotics instead of avoiding infections through hygiene and infrastructure.

ISSUES IN RURAL AND URBAN UGANDAN COMMUNITIES

Clare and Susan investigated antimicrobial use in two communities in Uganda. Nagongera is a rural village in Tororo District, while Namuwongo is an informal settlement (also called a 'slum') in Kampala, the capital of Uganda. In both communities, residents struggle with food poverty and access to clean water and public health infrastructure.

In Nagongera, water is available from wells and boreholes. The boreholes are a source of clean water, but the monthly access fee is more than many residents can afford. Instead, they must collect drinking water from wells that are contaminated by animals and potentially human waste. People in Namuwongo also lack reliable access to safe water, as water sources become contaminated during the rainy season.

In both communities, most households do not have access to a private latrine. Public toilets are available in the urban settlement of Namuwongo, but they are expensive to use and are closed at night. As a result, people are forced to use bushes, buckets and polythene bags as toilets. Residents are warned by public health campaigns to boil water before using it for cooking or drinking, but they do not always have the money for fuel or the time to boil water for multiple uses throughout the day.

Lack of clean water and sanitary facilities leads to diarrhoea and water-borne diseases. Although residents know why they are getting sick, they

do not have the money to access facilities or the power to demand better infrastructure. They deal with poor health caused by lack of sanitation by taking small doses of antibiotics, sometimes forgoing food in favour of medicine. Residents must remain well enough to work or they will be unable to afford basics like food.

Susan recounts that "in Kampala diarrhoea was common and there was frequent use of antibiotics in anticipation of diarrhoea almost every week." This level of antimicrobial use contributes to AMR, but simply targeting antibiotic use reduction fails to address the root causes of overuse in these communities – poverty and lack of access to hygienic facilities. Policy-makers in local, national and international governments must address these infrastructural issues in order to reduce the risks from AMR.

HOW LINKING POVERTY TO ANTIBIOTIC USE IN UGANDA CAN HELP PREVENT GLOBAL SUPERBUGS

Clare and Susan hope that their research will help global policy-makers address the causes of antimicrobial overuse. "We have promoted the concept that antibiotics are 'infrastructural', meaning that they are not only a part of the fabric of our health systems but also our societies," says Clare.

Awareness of why people overuse antibiotics highlights how merely restricting the use of these drugs is unlikely to be effective and will in fact harm struggling communities. Instead, providing access to clean water and public latrines in communities such as Nagongera and Namuwongo would make constant use of antibiotics unnecessary, improve public health and quality of life in these communities and lower medical costs for residents. Not only that, but antibiotic use in Uganda is a global problem, not a local one, as drug-resistant microbes can quickly spread across the world. That makes poverty and lack of public health infrastructure in Ugandan slums a global problem, too.

Clare and Susan's research highlights the important contributions medical anthropology can make on many levels. Advances in medical technology are not enough to solve global public health issues because medicines are used by people and distributed by human political and



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FIELD OF RESEARCH

Medical Anthropology

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RESEARCH PROJECT

Understanding how rural and urban
communities in Uganda interact with
antibiotics as a foundation for tackling
global antimicrobial resistance

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FUNDERS

ESRC, DHSC, GCRF

*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 of UK Research Innovation
(UKRI) in partnership with other funders [ES/
P008100/1]*

economic systems. Medical anthropologists forge links between these different domains, allowing holistic solutions to be found in a 'one health' approach that help to solve pressing, real-world problems that affect us all.

ABOUT MEDICAL ANTHROPOLOGY

WHAT IS MEDICAL ANTHROPOLOGY?

Medical anthropology is a branch of anthropology – the study of humans, and how humans live together in the world. Medical anthropologists study health, illness and medical systems. This includes the social processes, rituals and meanings around health and illness, western and traditional medicines, different medical systems, and death and dying.

WHY DO WE NEED MEDICAL ANTHROPOLOGY?

The health of people around the world continues to face challenges, with many infectious diseases that take a serious toll on peoples' lives – including drug resistant infections. Ageing populations, urbanisation

and migration lead to an increase in multimorbidity, with multiple conditions combining to create ill-health. Medical anthropology has been critical in informing understanding of the conditions and drivers of both infectious and chronic diseases. It has been instrumental in directing preventative action as well as responding to epidemics and longer-term health crises. The ability to link social, economic and political dimensions to distributions, conditions and experiences of ill health is critical in informing understandings and responses. Anthropologists are now commonly involved in health planning, health systems and health response teams on both national and international stages.

WHAT DOES THE FUTURE HOLD FOR MEDICAL ANTHROPOLOGISTS?

There is growing interest in medical anthropology due to recent events like the COVID-19 and Ebola crises, the growth of the anti-vaccination movement and the threat of antimicrobial resistance. "This means anthropologists are having to find ways to communicate about their research more with the general public as well as with people working in decision making positions," says Clare. "Future generations will advance our methodological toolkits to address changes in anthropology and to enhance the ways that we come to know and communicate about topics of study."

EXPLORE A CAREER IN MEDICAL ANTHROPOLOGY

The Royal Anthropological Institute has great learning resources and events for people interested in a career in anthropology: www.discoveranthropology.org.uk

Medical anthropologists may work in academic institutions conducting research, like Clare and Susan. There are also career opportunities in industry and the public sector, for example as health care consultants, health policy analysts or health services directors.

PATHWAY FROM SCHOOL TO MEDICAL ANTHROPOLOGIST

"At school and college, any of your subjects will help towards learning about anthropology later on," says Clare. "At university you can study straight anthropology, or with archaeology or human sciences." Specialisation in medical anthropology will usually occur at postgraduate level.

CLARE AND SUSAN'S TOP TIPS

CLARE: Follow your passions and make it count! Work hard, with focus, and forge your own path.

SUSAN: Work on your dream every day. With hard work and perseverance, you will achieve it.



HOW DID CLARE BECOME A MEDICAL ANTHROPOLOGIST?

When I was younger I was interested in why people lived differently in different places. I was fortunate to spend time in West Africa as a child and was fascinated by the comparison between life in rural Sierra Leone compared with life in a cosmopolitan area of England. I was struck by the ways that histories of different places meant that life, values, political priorities and health could be so different depending on where you lived.

I didn't deliberately become a researcher – I didn't plan it, and I'm rather surprised to find myself as a university professor! The way I think was inspired by my father, who was an engineer working on rural telecommunication systems, and I liked his methodical approach to working out problems. I was more interested in people than technology and went on to study anthropology.

I love music – I play violin and enjoy singing,

and I enjoy walking and cycling. But most of my out-of-work time is spent with my children who continue to inspire me!

I was really proud to be awarded the Woodruff Medal for my PhD. It is awarded each year to someone whose thesis has an impact on medicine. I was really pleased my research was recognised in this way, especially as I was an anthropologist rather than a medic.

HOW DID SUSAN BECOME A SOCIAL SCIENTIST?

When I was younger I was interested in people that were vulnerable and I aspired to give a voice to those who were oppressed. I spent my early life in Eldoret, Kenya, during the 1980s due to civil war in my home country, Uganda. As a child, listening to the stories told by my parents about the suffering of relatives and friends back home, I was fascinated by their stories about life, survival and escape.

My journey as a researcher started when

I was offered a government scholarship to study social sciences at university. I had the opportunity to be part of research teams which played a big role in shaping my interest in social aspects of community healthcare. It was most exciting to get a job with a malaria research project after leaving university, which marked the beginning of my career as a social scientist.

I enjoy playing golf and spend most of my free time doing that.

I was proud to attain a PhD scholarship at the London School of Hygiene and Tropical Medicine. The field is dominated by medical scientists so I never imagined that, as a social scientist, I would be considered for such an opportunity. I was proud to be the first social scientist in my organisation to be offered this scholarship. After, I hope to join an academic institution to engage in teaching and continue to conduct social science research.